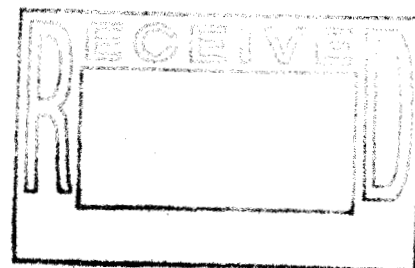


# **NOTICE**

**All drawings located at the end of the document.**

## **Draft Closeout Report For IHSS Group 800-1**

UBC 865, PAC 800-1204, PAC 800-1210,  
PAC 800-1212, IHSS 000-121, and PAC 000-504



DOCUMENT CLASSIFICATION  
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CEX-105-61

February 2004

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**Draft Closeout Report  
for IHSS Group 800-1**

UBC 865, PAC 800-1204, PAC 800-1210,  
PAC 800-1212, IHSS 000-121, and PAC 000-504

Approval received from the Colorado Department of Public Health and Environment

( ).

Approval letter contained in the Administrative Record.

**February 2004**

## TABLE OF CONTENTS

EXECUTIVE SUMMARY .....	V
1.0 INTRODUCTION .....	1
2.0 SITE CHARACTERIZATION.....	4
2.1 UBC 865, Materials Process Building .....	12
2.2 PAC 800-1204, Building 866 Spill .....	13
2.3 PAC 800-1212, Building 866 Sump Spill.....	13
2.4 IHSS 000-121, OPWL.....	14
2.5 Pre-Accelerated Action Characterization Data .....	14
2.6 Accelerated Action Characterization Data .....	14
2.7 Sums of Ratios .....	41
3.0 ACCELERATED ACTION.....	43
3.1 Removal Activities.....	45
4.0 CONFIRMATION SAMPLING .....	48
5.0 RCRA UNIT CLOSURE.....	48
6.0 SUBSURFACE SOIL RISK SCREEN .....	48
7.0 STEWARDSHIP ANALYSIS.....	50
7.1 Current Site Conditions.....	50
7.2 Near-Term Management Recommendations.....	50
7.3 Long-Term Stewardship Recommendations.....	51
8.0 DEVIATIONS FROM THE ER RSOP .....	51
9.0 POST-REMEDATION CONDITIONS .....	51
10.0 WASTE MANAGEMENT .....	52
11.0 SITE RECLAMATION .....	52
12.0 NO LONGER REPRESENTATIVE SAMPLING LOCATIONS .....	52
13.0 DATA QUALITY ASSESSMENT .....	53
13.1 Data Quality Assessment Process .....	53
13.2 Verification and Validation of Results.....	54
13.3 Summary of Data Quality .....	69
14.0 CONCLUSION.....	70
15.0 REFERENCES .....	71



## **LIST OF FIGURES**

Figure 1 IHSS Group 800-1 Location.....	2
Figure 2 IHSS Group 800-1 Pre-Accelerated Action Soil Sampling Results.....	3
Figure 3 IHSS Group 800-1 Accelerated Action Sampling Locations and Results, North Side.....	15
Figure 4 IHSS Group 800-1 Accelerated Action Sampling Locations and Results, South Side.....	16
Figure 5 IHSS Group 800-1 Slabs, Pits, Sump, and Process Lines Removed.....	46

## **LIST OF TABLES**

Table 1 IHSS Group 800-1 Characterization Specifications and Deviations From the IASAP Addendum.....	5
Table 2 Sampling and Analysis Summary.....	12
Table 3 IHSS Group 800-1 Accelerated Action Characterization Data .....	17
Table 4 RFCA Sums of Ratios Based on Radionuclide Concentrations .....	41
Table 5 Non-Radionuclide Surface Soil Sums of Ratios.....	43
Table 6 Dates of Accelerated Action Activities .....	45
Table 7 No Longer Representative Sampling Locations .....	53
Table 8 LCS Evaluation Summary .....	55
Table 9 Surrogate Recovery Summary .....	59
Table 10 Field Blank Summary .....	59
Table 11 Sample MS Evaluation Summary.....	60
Table 12 Sample MSD Evaluation Summary.....	63
Table 13 Field Duplicate Sample Frequency Summary .....	66
Table 14 RPD Evaluation Summary.....	66
Table 15 Validation and Verification Summary.....	69

## **LIST OF APPENDICES**

Appendix A – Project Photographs  
Appendix B – Correspondence

## **ENCLOSURE**

Complete Data Set Compact Disc – Pre-accelerated Action and Accelerated Action Data

## ACRONYMS

AAESE	Accelerated Action Ecological Screening Evaluation
AL	action level
Am	americium
AR	Administrative Record
CAS	Chemical Abstract Service
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	contaminant of concern
CRA	Comprehensive Risk Assessment
D&D	Decontamination and Decommissioning
DOE	U.S. Department of Energy
DQA	Data Quality Assessment
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
ER RSOP	Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation
ft	feet
ft <sup>2</sup>	square feet
FY	Fiscal Year
GS	gauging station
HPGe	high-purity germanium
HRR	Historical Release Report
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
K-H	Kaiser-Hill Company, L.L.C.
LCS	laboratory control sample
MDL	method detection limit
ug/kg	micrograms per kilogram
ug/L	micrograms per liter
mg/kg	milligrams per kilogram
MS	matrix spike
MSD	matrix spike duplicate
N/A	not applicable
nCi/g	nanocurie per gram
NFAA	No Further Accelerated Action
NLR	No Longer Representative
NPWL	New Process Waste Line
OPWL	Original Process Waste Lines
PAC	Potential Area of Concern
PARCCS	precision, accuracy, representativeness, completeness, comparability and sensitivity
PCB	polychlorinated biphenyl
pCi/g	picocuries per gram
pCi/l	picocuries per liter
PCOC	potential contaminant of concern
Pu	plutonium
QA	quality assurance
QC	quality control

RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RI/FS	Remedial Investigation/Feasibility Study
RIN	report identification number
RL	reporting limit
RPD	relative percent difference
RSOP	RFCA Standard Operating Protocol
SAP	Sampling and Analysis Plan
SBD	sample beginning depth
SED	sample end depth
Site	Rocky Flats Environmental Technology Site
SOR	sum of ratios
SSRS	Subsurface Soil Risk Screen
SVOC	semivolatile organic compound
SWD	Soil Water Database
UBC	under building contamination
V&V	verification and validation
VOC	volatile organic compound
WRW	wildlife refuge worker

## **EXECUTIVE SUMMARY**

This Closeout Report summarizes accelerated action activities conducted at Individual Hazardous Substance Site (IHSS) Group 800-1, which is located at the Rocky Flats Environmental Technology Site (RFETS). Activities were planned and executed in accordance with the Industrial Area (IA) Sampling and Analysis Plan (IASAP), IASAP Addendum #IA-03-01, and the Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol for Routine Soil Remediation (ER RSOP). Notification of the planned characterization and removal activities was provided in ER RSOP Notification #03-12.

Activities were conducted between August 14, 2003, and December 18, 2003, and included characterization and the removal of concrete slabs, foundation walls, process waste lines, and equipment pits associated with Building 865. Characterization analytical results indicate that all soil concentrations were less than the Wildlife Refuge Worker (WRW) action levels (ALs), except for one subsurface arsenic concentration. The arsenic concentration was 25.5 milligrams per kilogram (mg/kg) between 18.5 and 20.5 feet below ground surface, and the WRW AL is 22.2 mg/kg. The ecological receptor AL is 21.6 mg/kg. In addition, seven surface soil lead concentrations and six subsurface soil lead concentrations exceeded the ecological receptor AL. These lead exceedances ranged from 25.9 to 250 mg/kg, and the ecological receptor AL is 25.6 mg/kg. Results of the data quality assessment confirmed that the data collected and used are adequate for decision-making.

No soil was removed based on the characterization data and the Subsurface Soil Risk Screen conducted as part of this accelerated action. The elevated arsenic concentration was present at between 18.5 and 20.5 feet below ground surface, and significant erosion in the area is unlikely. The elevated arsenic and lead concentrations in soil and potential ecological risk will be evaluated in the Accelerated Action Ecological Screening Evaluation and the ecological portion of the Sitewide Comprehensive Risk Assessment (CRA).

Removal activities were consistent with and contributed to the ER RSOP overall long-term remedial action objectives for RFETS soil. The removal of concrete items, including the building slab and pits, and process waste lines contributed to the protection of human health and the environment, because potential sources of contamination were removed. These actions also minimized the need for long-term maintenance and institutional or engineering controls. Best management practices were used to prevent the spread of contamination (for example, erosion and dust controls during the accelerated action).

No IHSS Group-specific, near-term management techniques are required because of environmental conditions. Excavation with the IHSS Group will continue to be controlled through the Site Soil Disturbance Permit process. Access will be restricted to minimize disturbance to newly revegetated areas. Site access and security controls and the Soil Disturbance Permit process will remain in place pending implementation of long-term controls.

The presence of radionuclides, metals, volatile organic compounds, and semivolatile organic compounds in soil will be evaluated in the Sitewide CRA, which is part of the Resource Conservation and Recovery Act Facility Investigation/Remedial Investigation and Corrective Measures Study/Feasibility Study (RI/FS) that will be conducted for the Site. The need for and extent of any more general, long-term stewardship activities will also be evaluated in the RI/FS and will be proposed as part of the preferred alternative in the Proposed Plan for the Site. Institutional controls and other long-term stewardship requirements for Rocky Flats will ultimately be contained in the Corrective Action Decision/Record of Decision, any post-closure Colorado Hazardous Waste Act permit that may be required, and any post-RFCA agreement.

No long-term stewardship activities are recommended for IHSS Group 800-1 beyond the generally applicable Site requirements that may be imposed on this area in the future. Institutional controls that will be used as appropriate for this area include prohibitions on construction of buildings in the IA, restrictions on excavation or other soil disturbance, and prohibitions on groundwater pumping in the area of IHSS Group 800-1.

No specific engineered controls or environmental monitoring are anticipated as a result of the conditions remaining in IHSS Group 800-1.

This Closeout Report and associated documentation will be retained as part of the Rocky Flats Administrative Record file. The specific long-term stewardship recommendations will also be summarized in the Rocky Flats Long-Term Stewardship Strategy.

Approval of this Closeout Report constitutes regulatory agency concurrence that this IHSS Group is a No Further Accelerated Action (NFAA) site. A NFAA decision is justified based on the following:

- No accelerated action required based on soil data;
- No accelerated action required based on the subsurface soil risk screen; and
- No accelerated action required based the stewardship evaluation.

This information and NFAA determination will be documented in the Fiscal Year 04 Historical Release Report.

## **1.0 INTRODUCTION**

This Closeout Report summarizes the characterization and accelerated action activities conducted at Individual Hazardous Substance Site (IHSS) Group 800-1 at the Rocky Flats Environmental Technology Site (RFETS or Site) in Golden, Colorado. IHSS Group 800-1 consists of the following IHSS, Under Building Contamination (UBC), and Potential Area of Concern (PAC) sites:

- UBC 865, Materials Process Building;
- PAC 800-1204, Building 866 Spill;
- PAC 800-1212, Building 866 Sump Spill; and
- Portion of IHSS 000-121, Original Process Waste Lines (OPWL), including Line 16. PAC 800-1210, Transformers 865-1 and 865-2, and two short segments of PAC 000-504, the New Process Waste Lines (NPWL), are also included in this report. The location of IHSS Group 800-1 is shown on Figure 1, and the UBC, PAC and IHSS sites are shown on Figure 2.

Accelerated action activities were planned and executed in accordance with the Industrial Area (IA) Sampling and Analysis Plan (SAP) (IASAP) (DOE 2001a), IASAP Addendum #IA-03-01 (DOE 2002a), and the Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol (RSOP) for Routine Soil Remediation (ER RSOP) (DOE 2003a). Notification of the planned activities was provided in ER RSOP Notification #03-12 (DOE 2003b), which was approved by the Colorado Department of Public Health and Environment (CDPHE) on September 29, 2003 (CDPHE 2003).

The NPWL segments were not part of the original accelerated action project and were added after the action was initiated. The segments were not included in the IASAP Addendum (#IA-03-01) but were included in the ER RSOP Notification (#03-12).

This report contains the information necessary to demonstrate attainment of cleanup objectives and closure of IHSS Group 800-1, including:

- Site characterization information
  - Description of site characterization activities, and
  - Site characterization data, including data tables and maps;
- Site accelerated action information
  - Description of the accelerated action,
  - Map of the actual remediation area, including dates and durations of specific remedial activities, and
  - Photographs documenting site characterization, remediation, and reclamation activities;

- Confirmation sampling data (as applicable), including data tables and location maps, as well as a comparison of the confirmation data to applicable cleanup goals;
- Description of Resource Conservation and Recovery Act (RCRA) unit closure activities;
- Description of deviations from the ER RSOP;
- Description of the Subsurface Soil Risk Screen (SSRS);
- Description of near-term stewardship actions and long-term stewardship recommendations;
- Disposition of wastes;
- Site reclamation;
- Table of No Longer Representative (NLR) locations and sample numbers that have been remediated. These data will be used to mark database records so they are not used in the Comprehensive Risk Assessment (CRA) or other Site analyses; and
- Data Quality Assessment (DQA), including comparison of confirmation data with project data quality objectives (DQOs).

Approval of this Closeout Report constitutes regulatory agency concurrence that this IHSS Group is a No Further Accelerated Action (NFAA) site. This information and NFAA determination will be documented in the Fiscal Year (FY) 04 Historical Release Report.

## **2.0 SITE CHARACTERIZATION**

IHSS Group 800-1 characterization information consists of historical knowledge and analytical data. Historical information for the IHSSs was derived from previous studies (DOE 1992-2003, 2000a, 2001a) and is summarized in Sections 2.1 through 2.4. Analytical data for IHSS Group 800-1 (pre-accelerated action and accelerated action data) are summarized in Sections 2.5 and 2.6, respectively. A compact disc that contains the complete accelerated action data set, including quality assurance and quality control (QC) data, is enclosed with this report.

Accelerated action analytical data were collected in accordance with IASAP Addendum #IA-03-01 (DOE 2002a). Sampling specifications, including media sampled, depth intervals and analytes, are presented in Table 1. Deviations from the IASAP Addendum are also presented and explained in Table 1. A summary of sampling and analysis is presented in Table 2.

**Table 1**  
**IHSS Group 800-1 Characterization Specifications and Deviations From the IASAP Addendum**

Location Code	Proposed Easting	Proposed Northing	Actual Easting	Actual Northing	Soil Media	Depth Interval (ft)	Analyte	Comments
CF38-009	N/A	N/A	2083885.089	749098.928	Subsurface	4.5 – 4.8	Radionuclides Metals VOCs SVOCs	Biased location added under NPWL.
CF38-010	N/A	N/A	2083949.459	749095.829	Subsurface	4.5 – 4.8	Radionuclides Metals VOCs SVOCs	Biased location added under NPWL.
CG38-000	2084136.21	748969.37	2084136.224	748969.359	Surface	0.0 – 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CG38-001	2084121.28	749002.13	2084121.308	749002.136	Surface	0.0 – 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CG38-002	2084100.38	748972.82	2084100.416	748972.827	Surface	0.0 – 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CG38-003	2084127.26	749064.19	2084127.232	749064.186	Surface	0.0 – 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CG38-004	2084106.36	749034.89	2084106.392	749034.909	Surface Subsurface	0.0 – 0.5 2.5 – 4.5	Radionuclides Metals VOCs	Biased location to target OPWL; no significant change.
CG38-005	2084085.45	749005.58	2084085.356	749005.550	Surface	0.0 – 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CG38-006	2084133.25	749126.26	2084178.149	749135.046	Surface Subsurface	0.0 – 0.5 2.5 – 4.5	Radionuclides Metals VOCs	Statistical location relocated ~45 ft east to sample OPWL connected to welding pit.
CG38-007	2084112.34	749096.95	2084107.538	749101.173	Subsurface	2.5 – 4.5	Radionuclides Metals VOCs	Biased location relocated to be under OPWL/sump pump.
CG38-008	2084091.43	749067.65	2084091.442	749067.655	Surface	0.0 – 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.



Location Code	Proposed Easting	Proposed Northing	Actual Easting	Actual Northing	Soil Media	Depth Interval (ft)	Analyte	Comments
CG38-009	2084070.52	749038.34	2084070.580	749038.255	Surface Subsurface	0.0 - 0.5 2.5 - 4.5	Radionuclides Metals VOCs	Biased location to target OPWL; no significant change.
CG38-010	2084118.32	749159.02	2084118.313	749158.979	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CG38-011	2084097.41	749129.71	2084097.372	749129.753	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CG38-012	2084076.50	749100.41	2084076.561	749100.411	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CG38-013	2084055.60	749071.10	2084055.605	749071.079	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CG38-014	2084124.13	749105.54	2084121.172	749109.258	Subsurface	2.5 - 4.5	Radionuclides Metals VOCs	Biased location to target OPWL; relocated to be under OPWL sump pump.
CG38-015	2084125.70	749082.78	2084121.992	749095.916	Subsurface	2.5 - 4.5	Radionuclides Metals VOCs	Biased location to target OPWL; relocated 4 ft west and 13 ft north to be under OPWL sump pump.
CG38-016	2084114.71	749136.93	2084114.682	749134.883	Surface Subsurface	0.0 - 0.5 2.5 - 4.5	Radionuclides Metals VOCs	Biased location to target OPWL; no significant change.
CG38-017	2084018.95	749152.63	2084018.970	749152.585	Surface Subsurface	0.0 - 0.5 2.5 - 4.5	Radionuclides Metals VOCs (subsurface only)	Statistical location; no significant change.
CG38-018	2084018.95	749119.67	2084018.907	749119.684	Surface Subsurface	0.0 - 0.5 2.5 - 4.5	Radionuclides Metals VOCs (subsurface only)	Statistical location; no significant change.
CG38-019	2084039.36	749107.11	2084038.503	749104.234	Surface Subsurface	0.0 - 0.5 2.5 - 4.5	Radionuclides Metals VOCs (subsurface only)	Statistical location; no significant change.

Location Code	Proposed Easting	Proposed Northing	Actual Easting	Actual Northing	Soil Media	Depth Interval (ft)	Analyte	Comments
CG38-020	2084020.52	749084.35	2084020.463	749084.393	Surface Subsurface	0.0 - 0.5 2.5 - 4.5	Radionuclides, Metals VOCs (subsurface only)	Statistical location; no significant change.
CG38-021	2084047.21	749092.19	2084047.212	749092.163	Surface Subsurface	0.0 - 0.5 2.5 - 4.5	Radionuclides Metals VOCs (subsurface only)	Statistical location; no significant change.
CG38-022	2084068.43	749159.70	2084064.614	749165.450	Surface	0.0 - 0.5	Radionuclides PCBs	Statistical location relocated 6 ft northeast due to an obstruction (a structural support).
CG38-023	2084056.30	749149.46	2084056.340	749149.445	Surface	0.0 - 0.5	Radionuclides PCBs	Statistical location; no significant change.
CG38-024	2084071.12	749136.25	2084070.962	749136.152	Surface	0.0 - 0.5	Radionuclides PCBs	Statistical location; no significant change.
CG38-025	2084076.51	749125.47	2084076.520	749125.459	Surface	0.0 - 0.5	Radionuclides PCBs	Statistical location; no significant change.
CG38-026	2084057.10	749125.20	2084057.099	749125.204	Surface	0.0 - 0.5	Radionuclides PCBs	Statistical location; no significant change.
CG38-027	2084048.86	749100.67	2084048.876	749100.626	Surface Subsurface	0.0 - 0.5 2.5 - 4.5	Radionuclides Metals VOCs (subsurface only)	Statistical location; no significant change.
CG38-028	2084049.56	749082.61	2084049.584	749082.681	Surface Subsurface	0.0 - 0.5 2.5 - 4.5	Radionuclides Metals VOCs (subsurface only)	Statistical location; no significant change.
CG38-029	2084032.57	749092.58	2084032.559	749092.558	Surface Subsurface	0.0 - 0.5 2.5 - 4.5	Radionuclides Metals VOCs (subsurface only)	Statistical location; no significant change.
CG38-033	N/A	N/A	2084017.949	749095.774	Subsurface	4.5 - 4.8	Radionuclides Metals VOCs SVOCs	Biased location added under NPWL.
CG39-000	2084082.48	749162.47	2084087.876	749162.854	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location relocated ~5 ft east because original location was in trench (i.e., not accessible due to safety concerns).

Location Code	Proposed Easting	Proposed Northing	Actual Easting	Actual Northing	Soil Media	Depth Interval (ft)	Analyte	Comments
CG39-001	2084018.95	749190.31	2084018.973	749190.378	Surface Subsurface	0.0 - 0.5 2.5 - 4.5	Radionuclides Metals VOCs (subsurface only)	Statistical location; no significant change.
CG39-002	2084055.76	749172.91	2084051.060	749173.361	Surface	0.0 - 0.5	Radionuclides PCBs	Statistical location; no significant change.
CG39-003	2084071.93	749173.99	2084071.890	749174.002	Surface	0.0 - 0.5	Radionuclides PCBs	Statistical location; no significant change.
CH38-000	2084264.62	748988.31	2084264.637	748988.312	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CH38-001	2084249.69	749021.07	2084249.710	749021.080	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CH38-002	2084228.76	748991.77	2084228.763	748991.799	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CH38-003	2084207.88	748962.46	2084207.862	748960.423	Surface Subsurface	0.0 - 0.5 16.5 - 18.5 18.5 - 20.5	Radionuclides Metals VOCs	Biased location to target Drop Hammer Pit; no significant change.
CH38-004	2084234.77	749053.83	2084234.851	749053.765	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CH38-005	2084213.86	749024.53	2084193.671	749036.252	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location relocated ~20 ft west and 12 ft north; original location (Erie Ram Pit excavation) was covered by water; moved location to edge of pit excavation.
CH38-006	2084192.95	748995.22	2084202.443	748994.043	Surface Subsurface	0.0 - 0.5 16.5 - 18.5 18.5 - 20.5	Radionuclides Metals VOCs	Biased location to target Drop Hammer Pit; relocated ~10 ft east to the edge of the pit due to refusal.
CH38-007	2084172.04	748965.91	2084172.009	748965.929	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CH38-008	2084219.84	749086.59	2084219.852	749086.588	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.

Location Code	Proposed Easting	Proposed Northing	Actual Easting	Actual Northing	Soil Media	Depth Interval (ft)	Analyte	Comments
CH38-009	2084198.93	749057.29	2084198.921	749057.361	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CH38-010	2084178.02	749027.98	2084178.112	749025.845	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CH38-011	2084157.12	748998.67	2084150.557	749005.422	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location relocated ~7 ft west and 7 ft north; original location disturbed.
CH38-012	2084225.82	749148.66	2084225.00	749152.00	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CH38-013	2084204.91	749119.35	2084204.943	749119.319	Surface Subsurface	0.0 - 0.5 2.5 - 4.5	Radionuclides Metals VOCs	Biased location to target OPWL; no significant change.
CH38-014	2084184.01	749090.05	2084184.020	749090.013	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CH38-015	2084163.10	749060.74	2084152.456	749061.786	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location relocated ~11 ft west; original location disturbed.
CH38-016	2084142.19	749031.43	2084142.138	749031.403	Surface Subsurface	0.0 - 0.5 2.5 - 4.5	Radionuclides Metals VOCs	Biased location to target OPWL; no significant change.
CH38-017	2084189.99	749152.12	2084190.003	749152.104	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CH38-018	2084169.08	749122.81	2084169.059	749122.811	Surface Subsurface	0.0 - 0.5 2.5 - 4.5	Radionuclides Metals VOCs	Biased location to target OPWL; no significant change.
CH38-019	2084148.17	749093.50	2084148.140	749093.532	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CH38-020	2084154.15	749155.57	2084154.125	749155.570	Surface	0.0 - 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.

Location Code	Proposed Easting	Proposed Northing	Actual Easting	Actual Northing	Soil Media	Depth Interval (ft)	Analyte	Comments
CH38-021	2084144.54	748986.23	2084144.829	748984.186	Surface Subsurface	0.0 - 0.5 2.5 - 4.5	Radionuclides Metals VOCs	Biased location to target OPWL; no significant change.
CH38-022	2084180.64	749105.54	2084170.172	749109.246	Surface Subsurface	0.0 - 0.5 2.5 - 4.5	Radionuclides Metals VOCs	Biased location to target OPWL; relocated to be under OPWL.
CH38-023	2084208.90	749139.29	2084208.908	749139.295	Surface Subsurface	0.0 - 0.5 2.5 - 4.5	Radionuclides Metals VOCs	Biased location to target OPWL; no significant change.
CH38-024	2084215.96	748977.60	2084215.961	748977.600	Surface Subsurface	0.0 - 0.5 2.5 - 4.5	Radionuclides Metals VOCs	Biased location to target OPWL; no significant change.
CH38-025	2084169.78	748993.65	2084172.128	748991.748	Surface Subsurface	0.0 - 0.5 2.5 - 4.5	Radionuclides Metals VOCs	Biased location to target OPWL; no significant change.
CH38-026	2084175.44	749081.80	2084168.982	749093.623	Surface Subsurface	0.0 - 0.5 2.5 - 4.5	Radionuclides Metals VOCs	Biased location to target OPWL; relocated to be under OPWL.
CH38-028	N/A	N/A	2084187.735	749102.290	Subsurface	6.5 - 8.5 8.5 - 10.5	Radionuclides Metals VOCs	Biased location added to characterize the EB Welder Pit.
CH38-029	N/A	N/A	2084194.935	749012.765	Subsurface	6.5 - 8.5 8.5 - 10.5	Radionuclides Metals VOCs	Biased location added to characterize the Erie Ram Pit.
CH38-030	N/A	N/A	2084162.726	749022.421	Subsurface	4.5 - 6.5	Radionuclides Metals VOCs	Biased location added to characterize the Extrusion Pit.
CH38-031	N/A	N/A	2084207.482	749091.570	Subsurface	2.5 - 4.5 4.5 - 6.5	Radionuclides Metals VOCs	Biased location added to characterize under the Hot ISO Press pedestal.
CH38-032	N/A	N/A	2084217.870	748976.363	Surface Subsurface	0.0 - 0.5 16.5 - 18.5 18.5 - 20.5	Radionuclides Metals VOCs	Biased location added to characterize the eastern side of the Drop Hammer Pit.
CH38-033	N/A	N/A	2084192.316	748977.533	Surface Subsurface	0.0 - 0.5 16.5 - 18.5 18.5 - 20.5	Radionuclides Metals VOCs	Biased location added to characterize the western side of the Drop Hammer Pit.

Location Code	Proposed Easting	Proposed Northing	Actual Easting	Actual Northing	Soil Media	Depth Interval (ft)	Analyte	Comments
CH39-000	2084210.89	749181.42	2084209.50	749177.80	Surface	0.0 – 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CH39-001	2084175.06	749184.88	2084176.51	749182.80	Surface	0.0 – 0.5	Radionuclides Metals VOCs	Statistical location; no significant change.
CH39-002	2084139.23	749188.33	2084131.906	749172.986	Surface Subsurface	0.0 – 0.5 2.5 – 4.5	Radionuclides Metals VOCs	This sampling location was accidentally switched to CH39-004, which was a biased location to target OPWL; no significant change from planned coordinates for Location CH39-004 (original CH39-004 was sampled as CH39-002).
CH39-003	2084223.03	749166.76	2084221.019	749171.208	Surface Subsurface	0.0 – 0.5 2.5 – 4.5	Radionuclides Metals VOCs	Biased location to target OPWL; relocated to be under OPWL.
CH39-004	2084143.75	749173.04	2084140.02	749188.00	Surface	0.0 – 0.5	Radionuclides Metals VOCs	This sampling location was accidentally switched to CH39-002, which was a statistical location; no significant change from planned coordinates for Location CH39-002 (original CH39-002 was sampled as CH39-004).

N/A – not applicable.

VOC – Volatile organic compound

**Table 2**  
**Sampling and Analysis Summary**

Category	Planned Total	Actual Total
Number of Sampling Locations	66	75
Number of Samples	94	110
Number of Radionuclide Analyses	94	110
Number of Metal Analyses	87	103
Number of VOC Analyses	78	94
Number of SVOC Analyses	0	3
Number of PCB Analyses	7	7

## **2.1 UBC 865, Materials Process Building**

Building 865, built in 1970, was part of the Plant research and development program. The building housed metalworking equipment for the study of non-plutonium metals and the development of alloys and prototype hardware. Operations included metalworking, machining, and metallurgical laboratory operations. The most common metals processed were depleted uranium, steel, and aluminum. Other metals worked in the building included copper, molybdenum, beryllium, titanium, silver, niobium, tantalum, gold, iridium, platinum, vanadium, tungsten, and alloys of these metals.

All metalworking operations were conducted in the high-bay area. Metalworking processes included arc and vacuum induction melting, hammer forging, press forming, hydrospinning, swaging, extruding, drawing, rolling, diffusion bonding, furnace heat treating, salt bath and glovebox operations, and cutting and shearing.

Operations involving beryllium powder were conducted inside gloveboxes. High-purity beryllium was produced and canned (sealed in a can) in gloveboxes. Beryllium chips from lathe operations were processed in two types of mills (ball mill and fluid energy mill) to form a powder. The powder was then sealed into stainless steel containers in preparation for further processing.

Machining operations included milling, grinding, drilling, and cutting. The machine shop was equipped with standard equipment, including surface grinders, drill presses, and saws. Other equipment in the machine shop was specialized; lathes and milling machines in the shop were equipped with tracers.

Personnel in the metallurgy laboratory, located in the northeastern corner of the building, conducted mechanical testing of metals and prepared metal samples for examination. Samples were prepared for macroscopic and microscopic examination by sawing, cutting, mounting, grinding, polishing, and etching operations.

The final use of the building was to conduct metallography laboratory work and decontamination activities for the product research and development group.

Building 865 was demolished to its main foundation slab on during 2003 (DOE 2004). A portion of the High Bay slab was contaminated with depleted uranium (DOE 2001b) and that portion of the slab was sprayed with Instacote™ prior to building demolition. Process waste drains penetrating the foundation were filled to grade with grout prior to building decontamination and decommissioning (D&D). Pipe conduit openings in the building slab were plugged and grouted at the foundation level.

## **2.2 PAC 800-1204, Building 866 Spill**

Building 866 held five process waste tanks that serviced Buildings 865 and 889. Contaminant releases originating from filling the tanks are summarized below.

- January 1978 - Vent Pipe Overflow. A faulty vacuum breaker for a process waste line vent pipe between Buildings 864 and 881 allowed approximately 2 gallons of process waste containing depleted uranium to be released to the environment. Approximately 16 square feet (ft<sup>2</sup>) were affected near the 865 Guard Post. The day following the incident, 3 inches of moist gravel were removed.
- 1984 - Tank Overflow. A valve was left open while pumping decontamination water to a fill tank in Building 889. When the tank overfilled, the water drained to the sump pump and was then pumped to the process waste tanks in Building 865. These tanks also overflowed through the vent to the roof where they drained to the ground via the downspouts. Water samples collected from the north and south ditches contained  $2.2 \times 10^3$  micrograms per liter (µg/L) total uranium and maximum activities of  $7.9 \times 10^2$  and  $5.8 \times 10^2$  picocuries per liter (pCi/L) total beta activity and tritium, respectively. The drainage ditch west of Building 866 was dammed with gravel to contain the released liquid. Surface gravel from the area of the overflow was reportedly removed and shipped as waste. Between 40 and 45 gallons of liquid were vacuumed and taken to Building 889 waste drains.
- 1986 - Tank Overflow. Filling of the process waste tanks in Building 866 resulted in an overflow of process waste through the roof vent and out the downspout, releasing approximately 20 gallons to the ground. No contamination was found on the ground or in the building. Liquid level alarms were subsequently installed for each tank.

The tanks in Building 866 were closed pursuant to RCRA and removed prior to building demolition, which occurred during 2003 (DOE 2004).

## **2.3 PAC 800-1212, Building 866 Sump Spill**

In 1992 liquid and sludge waste was found in the concrete sump pit within the secondary containment system for the waste collection tanks (RCRA Units 40.17, 40.18, 40.19, 40.32, and 40.33). Approximately 35 gallons of liquid waste and sludge were retrieved from the pit and determined to contain gross alpha and beryllium contamination. After visual inspection of the sump, Civil Engineering and Environmental Design Engineering noted that it appeared groundwater was seeping into the sump along the northwestern wall, and seepage was especially evident in the northwestern corner. It was concluded that the sump had a visible pathway for waste to enter the environment. Based on noted groundwater seepage into the sump, the possibility also exists that the material in the sump may be remnant contamination from past spills documented in PAC 800-1204.

Responses to the occurrence included the following:

- The generating processes in Buildings 865 and 889 were shut down;
- The tanks in Building 866 were emptied with the exception of a very small amount of steam condensate; and



- The sump in Building 866 was emptied, the sludge removed, and the sump cleaned.

Secondary containment for the tanks in Building 866 was provided for by adequate epoxy sealing of the 2-foot curb surrounding the tanks as well as the floor and walls of the building. The sump was sealed off from the activities of the building with a steel plate that has a glass window in place to monitor water levels in the sump pit.

## **2.4 IHSS 000-121, OPWL**

OPWL (P16) and drains leading to the OPWL were present under the Building 865 slab (Figure 2). No subsurface waste lines were removed as part of building demolition. No historical information on Tank 23 has been located.

## **2.5 Pre-Accelerated Action Characterization Data**

Pre-accelerated action characterization data are presented in Figure 2. The only data within the IHSS Group are related to sampling around the two building transformers. The purpose of these data is to help define potential contaminants of concern (PCOCs) and sampling locations.

## **2.6 Accelerated Action Characterization Data**

Accelerated action soil sampling locations and analytical results for IHSS Group 800-1 are presented on Figures 3 and 4 and in Table 3. Only results greater than background means plus two standard deviations or reporting limits (RLs) are shown. Total uranium concentrations and uranium activities are estimated based on high-purity germanium (HPGe) results and shown in Table 3 in italics. The data, retrieved from the RFETS Soil Water Database (SWD) on January 26, 2004, are provided on the enclosed compact disc.

Data indicate that all contaminant concentrations were less than RFCA wildlife refuge worker (WRW) action levels (ALs), except for one subsurface arsenic concentration. The arsenic concentration at Sampling Location CH38-008 was 25.5 milligrams per kilogram (mg/kg) at between 18.5 and 20.5 feet below ground surface, and the WRW AL is 22.2 mg/kg. This arsenic concentration is evaluated as part of the SSRS in Section 6.0.

The one elevated arsenic concentration also exceeded the ecological receptor AL, which is 21.6 mg/kg. In addition, seven surface soil lead concentrations and six subsurface soil lead concentrations exceeded the ecological receptor AL. These lead exceedances ranged from 25.9 to 250 mg/kg, and the ecological receptor AL is 25.6 mg/kg. The elevated arsenic and lead concentrations will be further evaluated in the Accelerated Action Ecological Screening Evaluation (AAESE) and the ecological portion of the Sitewide CRA.

THIS TARGET SHEET REPRESENTS AN  
OVER-SIZED MAP / PLATE FOR THIS DOCUMENT:  
(Ref: 04-RF-00211; JLB-011-04)

## **Draft Closeout Report for IHSS Group 800-1**

**February 2004**

**Figure 3:**

### **IHSS Group 800-1 Accelerated Action Soil Sampling Locations and Results North Side**

**File: w:\projects\2003\characterization\800-1-existing data.apr**

**January 22, 2004**

**CERCLA Administrative Record Document, IA-A-001998**

U.S. DEPARTEMENT OF ENERGY  
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

GOLDEN, COLORADO

23

THIS TARGET SHEET REPRESENTS AN  
OVER-SIZED MAP / PLATE FOR THIS DOCUMENT:  
(Ref: 04-RF-00211; JLB-011-04)

## **Draft Closeout Report for IHSS Group 800-1**

**February 2004**

**Figure 4:**

### **IHSS Group 800-1 Accelerated Action Soil Sampling Locations and Results South Side**

**File: w:\projects\2003\characterization\800-1-existing data.apr**

**January 21, 2004**

**CERCLA Administrative Record Document, IA-A-001998**

**U.S. DEPARTEMENT OF ENERGY  
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE**

**GOLDEN, COLORADO**

**Table 3**  
**IHSS Group 800-1 Accelerated Action Characterization Data**

Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CF38-009	749098.93	2083885.09	4.5	6.5	Uranium, Total	5.73	mg/kg	4.26	2750.0	67.8	3.04
CF38-009	749098.93	2083885.09	4.5	6.5	Uranium-235	0.16	pCi/g	0.15	8.0	1900.0	0.12
CF38-009	749098.93	2083885.09	4.5	6.5	Uranium-238	1.93	pCi/g	1.43	351.0	1600.0	1.49
CF38-010	749114.958	2083811.677	5	5	2-Butanone	6.6	ug/kg	4.8	192000000	433000	-
CF38-010	749114.958	2083811.677	5	5	Acetone	16	ug/kg	4.7	102000000	211000	-
CF38-010	749114.958	2083811.677	5	5	Uranium, Total	6.5934	mg/kg	3.7719	2750	67.8	3.04
CG38-000	748969.36	2084136.22	0.0	0.3	Arsenic	11.90	mg/kg	4.00	22.2	21.6	10.09
CG38-000	748969.36	2084136.22	0.0	0.3	Barium	680.00	mg/kg	117.00	26400.0	-	141.26
CG38-000	748969.36	2084136.22	0.0	0.3	Copper	53.50	mg/kg	5.00	40900.0	-	18.06
CG38-000	748969.36	2084136.22	0.0	0.3	Iron	34000.00	mg/kg	820.00	307000.0	-	18037.00
CG38-000	748969.36	2084136.22	0.0	0.3	Manganese	634.00	mg/kg	11.00	3480.0	-	365.08
CG38-000	748969.36	2084136.22	0.0	0.3	Nickel	43.90	mg/kg	6.00	20400.0	-	14.91
CG38-000	748969.36	2084136.22	0.0	0.3	Strontium	369.00	mg/kg	12.00	613000.0	-	48.94
CG38-000	748969.36	2084136.22	0.0	0.3	Uranium, Total	11.35	mg/kg	3.76	2750.0	67.8	5.98
CG38-000	748969.36	2084136.22	0.0	0.3	Uranium-234	3.82	pCi/g	1.27	300.0	1800.0	2.25
CG38-000	748969.36	2084136.22	0.0	0.3	Uranium-235	0.13	pCi/g	0.13	8.0	1900.0	0.09
CG38-000	748969.36	2084136.22	0.0	0.3	Uranium-238	3.82	pCi/g	1.27	351.0	1600.0	2.00
CG38-000	748969.36	2084136.22	0.0	0.3	Zinc	335.00	mg/kg	3.00	307000.0	-	73.76
CG38-001	749002.14	2084121.31	0.0	0.3	Arsenic	10.40	mg/kg	4.00	22.2	21.6	10.09
CG38-001	749002.14	2084121.31	0.0	0.3	Barium	824.00	mg/kg	117.00	26400.0	-	141.26
CG38-001	749002.14	2084121.31	0.0	0.3	Copper	49.50	mg/kg	5.00	40900.0	-	18.06
CG38-001	749002.14	2084121.31	0.0	0.3	Iron	31700.00	mg/kg	820.00	307000.0	-	18037.00
CG38-001	749002.14	2084121.31	0.0	0.3	Manganese	595.00	mg/kg	11.00	3480.0	-	365.08
CG38-001	749002.14	2084121.31	0.0	0.3	Nickel	36.20	mg/kg	6.00	20400.0	-	14.91
CG38-001	749002.14	2084121.31	0.0	0.3	Strontium	414.00	mg/kg	12.00	613000.0	-	48.94
CG38-001	749002.14	2084121.31	0.0	0.3	Tin	3.26	mg/kg	3.00	613000.0	-	2.90

Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CG38-001	749002.14	2084121.31	0.0	0.3	Uranium, Total	8.10	mg/kg	3.95	2750.0	67.8	5.98
CG38-001	749002.14	2084121.31	0.0	0.3	Uranium-234	2.73	pCi/g	1.33	300.0	1800.0	2.25
CG38-001	749002.14	2084121.31	0.0	0.3	Uranium-235	0.18	pCi/g	0.13	8.0	1900.0	0.09
CG38-001	749002.14	2084121.31	0.0	0.3	Uranium-238	2.73	pCi/g	1.33	351.0	1600.0	2.00
CG38-001	749002.14	2084121.31	0.0	0.3	Zinc	154.00	mg/kg	3.00	307000.0	-	73.76
CG38-002	748972.83	2084100.42	0.0	0.3	Antimony	6.28	mg/kg	3.00	409.0	-	0.47
CG38-002	748972.83	2084100.42	0.0	0.3	Barium	764.00	mg/kg	117.00	26400.0	-	141.26
CG38-002	748972.83	2084100.42	0.0	0.3	Copper	49.40	mg/kg	5.00	40900.0	-	18.06
CG38-002	748972.83	2084100.42	0.0	0.3	Iron	33800.00	mg/kg	820.00	307000.0	-	18037.00
CG38-002	748972.83	2084100.42	0.0	0.3	Manganese	633.00	mg/kg	11.00	3480.0	-	365.08
CG38-002	748972.83	2084100.42	0.0	0.3	Nickel	44.10	mg/kg	6.00	20400.0	-	14.91
CG38-002	748972.83	2084100.42	0.0	0.3	Strontium	393.00	mg/kg	12.00	613000.0	-	48.94
CG38-002	748972.83	2084100.42	0.0	0.3	Tin	3.82	mg/kg	3.00	613000.0	-	2.90
CG38-002	748972.83	2084100.42	0.0	0.3	Uranium-235	0.15	pCi/g	0.13	8.0	1900.0	0.09
CG38-002	748972.83	2084100.42	0.0	0.3	Zinc	130.00	mg/kg	3.00	307000.0	-	73.76
CG38-003	749064.19	2084127.23	0.0	0.5	Aluminum	22000.00	mg/kg	5.30	228000.0	-	16902.00
CG38-003	749064.19	2084127.23	0.0	0.5	Beryllium	1.10	mg/kg	0.11	921.0	2.2	0.97
CG38-003	749064.19	2084127.23	0.0	0.5	Chromium	18.00	mg/kg	0.16	268.0	-	16.99
CG38-003	749064.19	2084127.23	0.0	0.5	Uranium-235	0.19	pCi/g	0.11	8.0	1900.0	0.09
CG38-004	749034.91	2084106.39	0.0	0.5	Aluminum	28000.00	mg/kg	5.10	228000.0	-	16902.00
CG38-004	749034.91	2084106.39	0.0	0.5	Barium	180.00	mg/kg	0.39	26400.0	-	141.26
CG38-004	749034.91	2084106.39	0.0	0.5	Beryllium	1.00	mg/kg	0.11	921.0	2.2	0.97
CG38-004	749034.91	2084106.39	0.0	0.5	Chromium	25.00	mg/kg	0.16	268.0	-	16.99
CG38-004	749034.91	2084106.39	0.0	0.5	Iron	20000.00	mg/kg	1.50	307000.0	-	18037.00
CG38-004	749034.91	2084106.39	0.0	0.5	Lithium	15.00	mg/kg	0.51	20400.0	-	11.55
CG38-004	749034.91	2084106.39	0.0	0.5	Nickel	19.00	mg/kg	0.21	20400.0	-	14.91
CG38-004	749034.91	2084106.39	0.0	0.5	Vanadium	46.00	mg/kg	0.49	7150.0	433.0	45.59
CG38-005	749005.55	2084085.36	0.0	0.3	Arsenic	10.80	mg/kg	4.00	22.2	21.6	10.09
CG38-005	749005.55	2084085.36	0.0	0.3	Barium	1210.00	mg/kg	117.00	26400.0	-	141.26

Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CG38-005	749005.55	2084085.36	0.0	0.3	Copper	100.00	mg/kg	5.00	40900.0	-	18.06
CG38-005	749005.55	2084085.36	0.0	0.3	Iron	30200.00	mg/kg	820.00	307000.0	-	18037.00
CG38-005	749005.55	2084085.36	0.0	0.3	Lead	32.10	mg/kg	9.00	1000.0	25.6	54.62
CG38-005	749005.55	2084085.36	0.0	0.3	Manganese	608.00	mg/kg	11.00	3480.0	-	365.08
CG38-005	749005.55	2084085.36	0.0	0.3	Nickel	38.50	mg/kg	6.00	20400.0	-	14.91
CG38-005	749005.55	2084085.36	0.0	0.3	Strontium	690.00	mg/kg	12.00	613000.0	-	48.94
CG38-005	749005.55	2084085.36	0.0	0.3	Uranium-235	0.18	pCi/g	0.12	8.0	1900.0	0.09
CG38-005	749005.55	2084085.36	0.0	0.3	Zinc	224.00	mg/kg	3.00	307000.0	-	73.76
CG38-006	749135.05	2084178.15	0.0	0.5	Arsenic	10.50	mg/kg	4.00	22.2	21.6	10.09
CG38-006	749135.05	2084178.15	0.0	0.5	Barium	620.00	mg/kg	117.00	26400.0	-	141.26
CG38-006	749135.05	2084178.15	0.0	0.5	Copper	39.30	mg/kg	5.00	40900.0	-	18.06
CG38-006	749135.05	2084178.15	0.0	0.5	Iron	33600.00	mg/kg	820.00	307000.0	-	18037.00
CG38-006	749135.05	2084178.15	0.0	0.5	Manganese	533.00	mg/kg	11.00	3480.0	-	365.08
CG38-006	749135.05	2084178.15	0.0	0.5	Nickel	47.10	mg/kg	6.00	20400.0	-	14.91
CG38-006	749135.05	2084178.15	0.0	0.5	Strontium	197.00	mg/kg	12.00	613000.0	-	48.94
CG38-006	749135.05	2084178.15	0.0	0.5	Uranium, Total	11.60	mg/kg	5.11	2750.0	67.8	5.98
CG38-006	749135.05	2084178.15	0.0	0.5	Uranium-234	3.91	pCi/g	1.72	300.0	1800.0	2.25
CG38-006	749135.05	2084178.15	0.0	0.5	Uranium-235	0.22	pCi/g	0.14	8.0	1900.0	0.09
CG38-006	749135.05	2084178.15	0.0	0.5	Uranium-238	3.91	pCi/g	1.72	351.0	1600.0	2.00
CG38-006	749135.05	2084178.15	0.0	0.5	Zinc	104.00	mg/kg	3.00	307000.0	-	73.76
CG38-006	749135.05	2084178.15	2.5	4.5	Toluene	2.27	ug/kg	5.37	31300000.0	128000.0	-
CG38-006	749135.05	2084178.15	2.5	4.5	Uranium, Total	16.34	mg/kg	6.01	2750.0	67.8	3.04
CG38-006	749135.05	2084178.15	2.5	4.5	Uranium-234	5.50	pCi/g	2.03	300.0	1800.0	2.64
CG38-006	749135.05	2084178.15	2.5	4.5	Uranium-235	0.24	pCi/g	0.18	8.0	1900.0	0.12
CG38-006	749135.05	2084178.15	2.5	4.5	Uranium-238	5.50	pCi/g	2.03	351.0	1600.0	1.49
CG38-007	749101.17	2084107.54	2.5	4.5	Strontium	450.00	mg/kg	0.06	613000.0	-	211.38
CG38-007	749101.17	2084107.54	2.5	4.5	Uranium-235	0.25	pCi/g	0.22	8.0	1900.0	0.12
CG38-008	749067.66	2084091.44	0.0	0.5	Aluminum	17000.00	mg/kg	5.30	228000.0	-	16902.00
CG38-008	749067.66	2084091.44	0.0	0.5	Uranium-235	0.16	pCi/g	0.12	8.0	1900.0	0.09

Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CG38-009	749038.26	2084070.58	0.0	0.5	Copper	26.00	mg/kg	0.04	40900.0	-	18.06
CG38-009	749038.26	2084070.58	0.0	0.5	Uranium-235	0.28	pCi/g	0.17	8.0	1900.0	0.09
CG38-010	749158.98	2084118.31	0.0	0.5	Acetone	7.50	ug/kg	4.80	102000000.0	211000.0	-
<b>CG38-010</b>	<b>749158.98</b>	<b>2084118.31</b>	<b>0.0</b>	<b>0.5</b>	<b>Lead</b>	<b>250.00</b>	<b>mg/kg</b>	<b>0.26</b>	<b>1000.0</b>	<b>25.6</b>	<b>54.62</b>
CG38-010	749158.98	2084118.31	0.0	0.5	Methylene chloride	1.40	ug/kg	0.83	2530000.0	39500.0	-
CG38-010	749158.98	2084118.31	0.0	0.5	Strontium	91.00	mg/kg	0.06	613000.0	-	48.94
CG38-010	749158.98	2084118.31	0.0	0.5	Uranium-235	0.20	pCi/g	0.18	8.0	1900.0	0.09
CG38-011	749129.75	2084097.37	0.0	0.5	Arsenic	15.00	mg/kg	4.00	22.2	21.6	10.09
CG38-011	749129.75	2084097.37	0.0	0.5	Barium	671.00	mg/kg	117.00	26400.0	-	141.26
CG38-011	749129.75	2084097.37	0.0	0.5	Copper	71.70	mg/kg	5.00	40900.0	-	18.06
CG38-011	749129.75	2084097.37	0.0	0.5	Iron	31800.00	mg/kg	820.00	307000.0	-	18037.00
CG38-011	749129.75	2084097.37	0.0	0.5	Manganese	455.00	mg/kg	11.00	3480.0	-	365.08
CG38-011	749129.75	2084097.37	0.0	0.5	Nickel	44.80	mg/kg	6.00	20400.0	-	14.91
CG38-011	749129.75	2084097.37	0.0	0.5	Strontium	368.00	mg/kg	12.00	613000.0	-	48.94
CG38-011	749129.75	2084097.37	0.0	0.5	Uranium-235	0.18	pCi/g	0.12	8.0	1900.0	0.09
CG38-011	749129.75	2084097.37	0.0	0.5	Zinc	344.00	mg/kg	3.00	307000.0	-	73.76
CG38-012	749100.41	2084076.56	0.0	0.5	Barium	190.00	mg/kg	0.40	26400.0	-	141.26
CG38-012	749100.41	2084076.56	0.0	0.5	Strontium	300.00	mg/kg	0.06	613000.0	-	48.94
CG38-012	749100.41	2084076.56	0.0	0.5	Uranium, Total	11.29	mg/kg	5.50	2750.0	67.8	5.98
CG38-012	749100.41	2084076.56	0.0	0.5	Uranium-234	3.80	pCi/g	1.85	300.0	1800.0	2.25
CG38-012	749100.41	2084076.56	0.0	0.5	Uranium-235	0.19	pCi/g	0.14	8.0	1900.0	0.09
CG38-012	749100.41	2084076.56	0.0	0.5	Uranium-238	3.80	pCi/g	1.85	351.0	1600.0	2.00
CG38-012	749100.41	2084076.56	0.0	0.5	Uranium, Total	13.88	mg/kg	6.18	2750.0	67.8	3.04
CG38-014	749109.26	2084121.17	4.5	6.5	Uranium-234	4.67	pCi/g	2.08	300.0	1800.0	2.64
CG38-014	749109.26	2084121.17	4.5	6.5	Uranium-235	0.27	pCi/g	0.14	8.0	1900.0	0.12
CG38-014	749109.26	2084121.17	4.5	6.5	Uranium-238	4.67	pCi/g	2.08	351.0	1600.0	1.49
CG38-014	749109.26	2084121.17	4.5	6.5	Uranium, Total	12.68	mg/kg	6.51	2750.0	67.8	3.04
CG38-015	749095.92	2084121.99	4.5	6.5	Uranium-234	4.27	pCi/g	2.19	300.0	1800.0	2.64

## Draft Closeout Report for IHSS Group 800-1

Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CG38-015	749095.92	2084121.99	4.5	6.5	Uranium-235	0.23	pCi/g	0.16	8.0	1900.0	0.12
CG38-015	749095.92	2084121.99	4.5	6.5	Uranium-238	4.27	pCi/g	2.19	351.0	1600.0	1.49
CG38-016	749134.88	2084114.68	0.0	0.5	Barium	727.00	mg/kg	117.00	26400.0	-	141.26
CG38-016	749134.88	2084114.68	0.0	0.5	Copper	55.20	mg/kg	5.00	40900.0	-	18.06
CG38-016	749134.88	2084114.68	0.0	0.5	Iron	31800.00	mg/kg	820.00	307000.0	-	18037.00
CG38-016	749134.88	2084114.68	0.0	0.5	Manganese	384.00	mg/kg	11.00	3480.0	-	365.08
CG38-016	749134.88	2084114.68	0.0	0.5	Nickel	40.90	mg/kg	6.00	20400.0	-	14.91
CG38-016	749134.88	2084114.68	0.0	0.5	Strontium	348.00	mg/kg	12.00	613000.0	-	48.94
CG38-016	749134.88	2084114.68	0.0	0.5	Uranium-235	0.16	pCi/g	0.12	8.0	1900.0	0.09
CG38-016	749134.88	2084114.68	0.0	0.5	Zinc	174.00	mg/kg	3.00	307000.0	-	73.76
CG38-016	749134.88	2084114.68	2.5	4.5	Strontium	450.00	mg/kg	0.05	613000.0	-	211.38
CG38-016	749134.88	2084114.68	2.5	4.5	Uranium, Total	5.79	mg/kg	4.13	2750.0	67.8	3.04
CG38-016	749134.88	2084114.68	2.5	4.5	Uranium-235	0.14	pCi/g	0.14	8.0	1900.0	0.12
CG38-016	749134.88	2084114.68	2.5	4.5	Uranium-238	1.95	pCi/g	1.39	351.0	1600.0	1.49
CG38-017	749152.59	2084018.97	0.0	0.5	Aluminum	22000.00	mg/kg	5.40	228000.0	-	16902.00
CG38-017	749152.59	2084018.97	0.0	0.5	Barium	240.00	mg/kg	0.41	26400.0	-	141.26
CG38-017	749152.59	2084018.97	0.0	0.5	Chromium	22.00	mg/kg	0.17	268.0	-	16.99
CG38-017	749152.59	2084018.97	0.0	0.5	Copper	20.00	mg/kg	0.05	40900.0	-	18.06
CG38-017	749152.59	2084018.97	0.0	0.5	Lithium	17.00	mg/kg	0.54	20400.0	-	11.55
CG38-017	749152.59	2084018.97	0.0	0.5	Nickel	16.00	mg/kg	0.22	20400.0	-	14.91
CG38-017	749152.59	2084018.97	0.0	0.5	Plutonium-239/240	0.08	pCi/g	0.06	50.0	3800.0	0.07
CG38-017	749152.59	2084018.97	0.0	0.5	Strontium	88.00	mg/kg	0.07	613000.0	-	48.94
CG38-017	749152.59	2084018.97	0.0	0.5	Vanadium	46.00	mg/kg	0.51	7150.0	433.0	45.59
CG38-017	749152.59	2084018.97	0.5	2.5	Methylene chloride	1.70	ug/kg	0.91	2530000.0	39500.0	-
CG38-017	749152.59	2084018.97	0.5	2.5	Naphthalene	1.40	ug/kg	0.98	3090000.0	-	-
CG38-017	749152.59	2084018.97	0.5	2.5	Strontium	340.00	mg/kg	0.07	613000.0	-	211.38
CG38-018	749119.68	2084018.91	0.0	0.5	Barium	200.00	mg/kg	0.43	26400.0	-	141.26
CG38-018	749119.68	2084018.91	0.0	0.5	Strontium	330.00	mg/kg	0.07	613000.0	-	48.94



Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CG38-018	749119.68	2084018.91	0.5	2.5	Strontium	310.00	mg/kg	0.06	613000.0	-	211.38
CG38-018	749119.68	2084018.91	0.5	2.5	Uranium, Total	11.84	mg/kg	3.80	2750.0	67.8	3.04
CG38-018	749119.68	2084018.91	0.5	2.5	Uranium-234	3.99	pCi/g	1.28	300.0	1800.0	2.64
CG38-018	749119.68	2084018.91	0.5	2.5	Uranium-235	0.19	pCi/g	0.12	8.0	1900.0	0.12
CG38-018	749119.68	2084018.91	0.5	2.5	Uranium-238	3.99	pCi/g	1.28	351.0	1600.0	1.49
CG38-019	749104.23	2084038.50	0.0	0.5	Barium	330.00	mg/kg	0.37	26400.0	-	141.26
CG38-019	749104.23	2084038.50	0.0	0.5	Strontium	230.00	mg/kg	0.06	613000.0	-	48.94
CG38-019	749104.23	2084038.50	0.0	0.5	Uranium, Total	13.63	mg/kg	6.10	2750.0	67.8	5.98
CG38-019	749104.23	2084038.50	0.0	0.5	Uranium-234	4.59	pCi/g	2.05	300.0	1800.0	2.25
CG38-019	749104.23	2084038.50	0.0	0.5	Uranium-235	0.25	pCi/g	0.16	8.0	1900.0	0.09
CG38-019	749104.23	2084038.50	0.0	0.5	Uranium-238	4.59	pCi/g	2.05	351.0	1600.0	2.00
CG38-019	749104.23	2084038.50	0.5	2.5	Lead	30.00	mg/kg	0.30	1000.0	25.6	24.97
CG38-019	749104.23	2084038.50	0.5	2.5	Strontium	300.00	mg/kg	0.07	613000.0	-	211.38
CG38-019	749104.23	2084038.50	0.5	2.5	Uranium, Total	5.99	mg/kg	5.09	2750.0	67.8	3.04
CG38-019	749104.23	2084038.50	0.5	2.5	Uranium-238	2.02	pCi/g	1.71	351.0	1600.0	1.49
CG38-020	749084.39	2084020.46	0.0	0.5	Copper	27.00	mg/kg	0.04	40900.0	-	18.06
CG38-020	749084.39	2084020.46	0.0	0.5	Uranium-235	0.22	pCi/g	0.12	8.0	1900.0	0.09
CG38-020	749084.39	2084020.46	0.5	2.5	Uranium, Total	12.66	mg/kg	3.96	2750.0	67.8	3.04
CG38-020	749084.39	2084020.46	0.5	2.5	Uranium-234	4.26	pCi/g	1.34	300.0	1800.0	2.64
CG38-020	749084.39	2084020.46	0.5	2.5	Uranium-238	4.26	pCi/g	1.34	351.0	1600.0	1.49
CG38-021	749092.16	2084047.21	0.0	0.5	Antimony	7.38	mg/kg	3.00	409.0	-	0.47
CG38-021	749092.16	2084047.21	0.0	0.5	Arsenic	13.70	mg/kg	4.00	22.2	21.6	10.09
CG38-021	749092.16	2084047.21	0.0	0.5	Barium	839.00	mg/kg	117.00	26400.0	-	141.26
CG38-021	749092.16	2084047.21	0.0	0.5	Chromium	32.00	mg/kg	7.00	268.0	-	16.99
CG38-021	749092.16	2084047.21	0.0	0.5	Copper	68.40	mg/kg	5.00	40900.0	-	18.06
CG38-021	749092.16	2084047.21	0.0	0.5	Iron	38600.00	mg/kg	820.00	307000.0	-	18037.00
CG38-021	749092.16	2084047.21	0.0	0.5	Manganese	726.00	mg/kg	11.00	3480.0	-	365.08
CG38-021	749092.16	2084047.21	0.0	0.5	Nickel	49.50	mg/kg	6.00	20400.0	-	14.91
CG38-021	749092.16	2084047.21	0.0	0.5	Strontium	372.00	mg/kg	12.00	613000.0	-	48.94

Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CG38-021	749092.16	2084047.21	0.0	0.5	Uranium-235	0.14	pCi/g	0.05	8.0	1900.0	0.09
CG38-021	749092.16	2084047.21	0.0	0.5	Vanadium	112.00	mg/kg	17.00	7150.0	433.0	45.59
CG38-021	749092.16	2084047.21	0.0	0.5	Zinc	176.00	mg/kg	3.00	307000.0	-	73.76
CG38-021	749092.16	2084047.21	0.5	2.5	Barium	886.00	mg/kg	117.00	26400.0	-	289.38
CG38-021	749092.16	2084047.21	0.5	2.5	Copper	72.10	mg/kg	5.00	40900.0	-	38.21
CG38-021	749092.16	2084047.21	0.5	2.5	Lead	40.50	mg/kg	9.00	1000.0	25.6	24.97
CG38-021	749092.16	2084047.21	0.5	2.5	Strontium	419.00	mg/kg	12.00	613000.0	-	211.38
CG38-021	749092.16	2084047.21	0.5	2.5	Uranium-235	0.45	pCi/g	0.07	8.0	1900.0	0.12
CG38-021	749092.16	2084047.21	0.5	2.5	Zinc	147.00	mg/kg	3.00	307000.0	-	139.10
CG38-022	749165.45	2084064.61	0.3	0.8	Aroclor-1016	2.60	ug/kg	2.00	46400.0	-	-
CG38-022	749165.45	2084064.61	0.3	0.8	Aroclor-1254	39.00	ug/kg	4.40	12400.0	371000.0	-
CG38-022	749165.45	2084064.61	0.3	0.8	Aroclor-1260	29.00	ug/kg	6.10	12400.0	-	-
CG38-022	749165.45	2084064.61	0.3	0.8	Uranium, Total	4.46	mg/kg	0.55	2750.0	67.8	3.04
CG38-022	749165.45	2084064.61	0.3	0.8	Uranium-238	1.50	pCi/g	0.19	351.0	1600.0	1.49
CG38-022	749165.45	2084064.61	0.3	0.8	Aroclor-1248	66.00	ug/kg	11.00	12400.0	-	-
CG38-023	749149.45	2084056.34	0.0	0.3	Uranium, Total	11.70	mg/kg	5.28	2750.0	67.8	5.98
CG38-023	749149.45	2084056.34	0.0	0.3	Uranium-234	3.94	pCi/g	1.78	300.0	1800.0	2.25
CG38-023	749149.45	2084056.34	0.0	0.3	Uranium-235	0.22	pCi/g	0.13	8.0	1900.0	0.09
CG38-023	749149.45	2084056.34	0.0	0.3	Uranium-238	3.94	pCi/g	1.78	351.0	1600.0	2.00
CG38-024	749136.15	2084070.96	0.3	0.8	Aroclor-1254	18.00	ug/kg	4.50	12400.0	371000.0	-
CG38-024	749136.15	2084070.96	0.3	0.8	Aroclor-1260	24.00	ug/kg	6.20	12400.0	-	-
CG38-024	749136.15	2084070.96	0.3	0.8	Uranium, Total	5.61	mg/kg	4.42	2750.0	67.8	3.04
CG38-024	749136.15	2084070.96	0.3	0.8	Uranium-238	1.89	pCi/g	1.49	351.0	1600.0	1.49
CG38-025	749125.46	2084076.52	0.3	0.8	Aroclor-1260	40.00	ug/kg	6.10	12400.0	-	-
CG38-025	749125.46	2084076.52	0.3	0.8	Uranium, Total	5.51	mg/kg	4.18	2750.0	67.8	3.04
CG38-025	749125.46	2084076.52	0.3	0.8	Uranium-238	1.86	pCi/g	1.41	351.0	1600.0	1.49
CG38-026	749125.20	2084057.10	0.3	0.8	Aroclor-1016	65.00	ug/kg	2.00	46400.0	-	-
CG38-026	749125.20	2084057.10	0.3	0.8	Aroclor-1254	150.00	ug/kg	4.60	12400.0	371000.0	-
CG38-026	749125.20	2084057.10	0.3	0.8	Aroclor-1260	62.00	ug/kg	6.30	12400.0	-	-

32

## Draft Closeout Report for IHSS Group 800-1

Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CG38-027	749100.63	2084048.88	0.0	0.5	Arsenic	10.10	mg/kg	4.00	22.2	21.6	10.09
CG38-027	749100.63	2084048.88	0.0	0.5	Barium	871.00	mg/kg	117.00	26400.0	-	141.26
CG38-027	749100.63	2084048.88	0.0	0.5	Chromium	25.80	mg/kg	7.00	268.0	-	16.99
CG38-027	749100.63	2084048.88	0.0	0.5	Copper	65.30	mg/kg	5.00	40900.0	-	18.06
CG38-027	749100.63	2084048.88	0.0	0.5	Iron	23100.00	mg/kg	820.00	307000.0	-	18037.00
CG38-027	749100.63	2084048.88	0.0	0.5	Lead	83.00	mg/kg	9.00	1000.0	25.6	54.62
CG38-027	749100.63	2084048.88	0.0	0.5	Nickel	35.80	mg/kg	6.00	20400.0	-	14.91
CG38-027	749100.63	2084048.88	0.0	0.5	Plutonium-239/240	0.10	pCi/g	0.06	50.0	3800.0	0.07
CG38-027	749100.63	2084048.88	0.0	0.5	Strontium	334.00	mg/kg	12.00	613000.0	-	48.94
CG38-027	749100.63	2084048.88	0.0	0.5	Uranium-235	0.26	pCi/g	0.05	8.0	1900.0	0.09
CG38-027	749100.63	2084048.88	0.0	0.5	Vanadium	113.00	mg/kg	17.00	7150.0	433.0	45.59
CG38-027	749100.63	2084048.88	0.0	0.5	Zinc	110.00	mg/kg	3.00	307000.0	-	73.76
CG38-027	749100.63	2084048.88	0.5	2.5	Barium	775.00	mg/kg	117.00	26400.0	-	289.38
CG38-027	749100.63	2084048.88	0.5	2.5	Copper	85.60	mg/kg	5.00	40900.0	-	38.21
CG38-027	749100.63	2084048.88	0.5	2.5	Lead	28.20	mg/kg	9.00	1000.0	25.6	24.97
CG38-027	749100.63	2084048.88	0.5	2.5	Plutonium-239/240	0.16	pCi/g	0.06	50.0	3800.0	0.02
CG38-027	749100.63	2084048.88	0.5	2.5	Strontium	444.00	mg/kg	12.00	613000.0	-	211.38
CG38-027	749100.63	2084048.88	0.5	2.5	Uranium-235	0.27	pCi/g	0.14	8.0	1900.0	0.12
CG38-028	749082.68	2084049.58	0.0	0.5	Arsenic	10.50	mg/kg	4.00	22.2	21.6	10.09
CG38-028	749082.68	2084049.58	0.0	0.5	Barium	855.00	mg/kg	117.00	26400.0	-	141.26
CG38-028	749082.68	2084049.58	0.0	0.5	Cadmium	2.19	mg/kg	2.00	962.0	-	1.61
CG38-028	749082.68	2084049.58	0.0	0.5	Chromium	27.80	mg/kg	7.00	268.0	-	16.99
CG38-028	749082.68	2084049.58	0.0	0.5	Copper	67.00	mg/kg	5.00	40900.0	-	18.06
CG38-028	749082.68	2084049.58	0.0	0.5	Iron	24600.00	mg/kg	820.00	307000.0	-	18037.00
CG38-028	749082.68	2084049.58	0.0	0.5	Lead	27.60	mg/kg	9.00	1000.0	25.6	54.62
CG38-028	749082.68	2084049.58	0.0	0.5	Nickel	38.60	mg/kg	6.00	20400.0	-	14.91
CG38-028	749082.68	2084049.58	0.0	0.5	Strontium	485.00	mg/kg	12.00	613000.0	-	48.94
CG38-028	749082.68	2084049.58	0.0	0.5	Uranium-235	0.41	pCi/g	0.13	8.0	1900.0	0.09

Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CG38-028	749082.68	2084049.58	0.0	0.5	Zinc	123.00	mg/kg	3.00	307000.0	-	73.76
CG38-028	749082.68	2084049.58	0.5	2.5	Barium	689.00	mg/kg	117.00	26400.0	-	289.38
CG38-028	749082.68	2084049.58	0.5	2.5	Copper	70.80	mg/kg	5.00	40900.0	-	38.21
CG38-028	749082.68	2084049.58	0.5	2.5	Lead	28.30	mg/kg	9.00	1000.0	25.6	24.97
CG38-028	749082.68	2084049.58	0.5	2.5	Strontium	522.00	mg/kg	12.00	613000.0	-	211.38
CG38-028	749082.68	2084049.58	0.5	2.5	Uranium, Total	14.36	mg/kg	5.88	2750.0	67.8	3.04
CG38-028	749082.68	2084049.58	0.5	2.5	Uranium-234	4.84	pCi/g	1.98	300.0	1800.0	2.64
CG38-028	749082.68	2084049.58	0.5	2.5	Uranium-235	0.27	pCi/g	0.15	8.0	1900.0	0.12
CG38-028	749082.68	2084049.58	0.5	2.5	Uranium-238	4.84	pCi/g	1.98	351.0	1600.0	1.49
CG38-028	749082.68	2084049.58	2.0	2.5	Plutonium-239/240	0.06	pCi/g	0.06	50.0	3800.0	0.02
CG38-028	749082.68	2084049.58	2.0	2.5	Uranium-235	0.30	pCi/g	0.05	8.0	1900.0	0.12
CG38-029	749092.56	2084032.56	0.0	0.5	Antimony	4.83	mg/kg	3.00	409.0	-	0.47
CG38-029	749092.56	2084032.56	0.0	0.5	Arsenic	11.20	mg/kg	4.00	22.2	21.6	10.09
CG38-029	749092.56	2084032.56	0.0	0.5	Barium	961.00	mg/kg	117.00	26400.0	-	141.26
CG38-029	749092.56	2084032.56	0.0	0.5	Chromium	26.00	mg/kg	7.00	268.0	-	16.99
CG38-029	749092.56	2084032.56	0.0	0.5	Copper	38.10	mg/kg	5.00	40900.0	-	18.06
CG38-029	749092.56	2084032.56	0.0	0.5	Iron	25000.00	mg/kg	820.00	307000.0	-	18037.00
CG38-029	749092.56	2084032.56	0.0	0.5	Nickel	38.70	mg/kg	6.00	20400.0	-	14.91
CG38-029	749092.56	2084032.56	0.0	0.5	Strontium	418.00	mg/kg	12.00	613000.0	-	48.94
CG38-029	749092.56	2084032.56	0.0	0.5	Tin	3.87	mg/kg	3.00	613000.0	-	2.90
CG38-029	749092.56	2084032.56	0.0	0.5	Uranium-235	0.52	pCi/g	0.05	8.0	1900.0	0.09
CG38-029	749092.56	2084032.56	0.0	0.5	Zinc	100.00	mg/kg	3.00	307000.0	-	73.76
CG38-029	749092.56	2084032.56	0.5	2.5	Acetone	26.00	ug/kg	5.70	102000000.0	211000.0	-
CG38-029	749092.56	2084032.56	0.5	2.5	Methylene chloride	1.60	ug/kg	0.99	2530000.0	39500.0	-
CG38-029	749092.56	2084032.56	0.5	2.5	Plutonium-239/240	0.08	pCi/g	0.08	50.0	3800.0	0.02
CG38-029	749092.56	2084032.56	0.5	1.0	Uranium, Total	3.89	mg/kg	0.38	2750.0	67.8	3.04
CG39-000	749162.85	2084087.88	0.0	0.5	Antimony	5.78	mg/kg	3.00	409.0	-	0.47

Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CG39-000	749162.85	2084087.88	0.0	0.5	Arsenic	15.30	mg/kg	4.00	22.2	21.6	10.09
CG39-000	749162.85	2084087.88	0.0	0.5	Barium	597.00	mg/kg	117.00	26400.0	-	141.26
CG39-000	749162.85	2084087.88	0.0	0.5	Copper	40.10	mg/kg	5.00	40900.0	-	18.06
CG39-000	749162.85	2084087.88	0.0	0.5	Iron	30400.00	mg/kg	820.00	307000.0	-	18037.00
CG39-000	749162.85	2084087.88	0.0	0.5	Manganese	507.00	mg/kg	11.00	3480.0	-	365.08
CG39-000	749162.85	2084087.88	0.0	0.5	Naphthalene	64.30	ug/kg	5.54	3090000.0	-	-
CG39-000	749162.85	2084087.88	0.0	0.5	Nickel	44.10	mg/kg	6.00	20400.0	-	14.91
CG39-000	749162.85	2084087.88	0.0	0.5	Strontium	197.00	mg/kg	12.00	613000.0	-	48.94
CG39-000	749162.85	2084087.88	0.0	0.5	Uranium-235	0.19	pCi/g	0.16	8.0	1900.0	0.09
CG39-000	749162.85	2084087.88	0.0	0.5	Vanadium	106.00	mg/kg	17.00	7150.0	433.0	45.59
CG39-000	749162.85	2084087.88	0.0	0.5	Zinc	103.00	mg/kg	3.00	307000.0	-	73.76
CG39-001	749190.38	2084018.97	0.0	0.5	Strontium	160.00	mg/kg	0.06	613000.0	-	48.94
CG39-001	749190.38	2084018.97	0.0	0.5	Uranium, Total	12.26	mg/kg	5.69	2750.0	67.8	5.98
CG39-001	749190.38	2084018.97	0.0	0.5	Uranium-234	4.13	pCi/g	1.92	300.0	1800.0	2.25
CG39-001	749190.38	2084018.97	0.0	0.5	Uranium-235	0.28	pCi/g	0.17	8.0	1900.0	0.09
CG39-001	749190.38	2084018.97	0.0	0.5	Uranium-238	4.13	pCi/g	1.92	351.0	1600.0	2.00
CG39-001	749190.38	2084018.97	0.5	2.5	Uranium, Total	11.68	mg/kg	5.14	2750.0	67.8	3.04
CG39-001	749190.38	2084018.97	0.5	2.5	Uranium-234	3.93	pCi/g	1.73	300.0	1800.0	2.64
CG39-001	749190.38	2084018.97	0.5	2.5	Uranium-235	0.22	pCi/g	0.14	8.0	1900.0	0.12
CG39-001	749190.38	2084018.97	0.5	2.5	Uranium-238	3.93	pCi/g	1.73	351.0	1600.0	1.49
CG39-002	749173.36	2084051.06	0.0	0.5	Uranium, Total	20.61	mg/kg	6.39	2750.0	67.8	5.98
CG39-002	749173.36	2084051.06	0.0	0.5	Uranium-234	6.94	pCi/g	2.15	300.0	1800.0	2.25
CG39-002	749173.36	2084051.06	0.0	0.5	Uranium-235	0.14	pCi/g	0.14	8.0	1900.0	0.09
CG39-002	749173.36	2084051.06	0.0	0.5	Uranium-238	6.94	pCi/g	2.15	351.0	1600.0	2.00
CG39-003	749174.00	2084071.89	0.3	0.8	Aroclor-1254	6.30	ug/kg	4.40	12400.0	371000.0	-
CG39-003	749174.00	2084071.89	0.3	0.8	Uranium, Total	8.86	mg/kg	4.97	2750.0	67.8	3.04
CG39-003	749174.00	2084071.89	0.3	0.8	Uranium-234	2.98	pCi/g	1.67	300.0	1800.0	2.64
CG39-003	749174.00	2084071.89	0.3	0.8	Uranium-235	0.22	pCi/g	0.16	8.0	1900.0	0.12
CG39-003	749174.00	2084071.89	0.3	0.8	Uranium-238	2.98	pCi/g	1.67	351.0	1600.0	1.49

Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CH38-000	748988.31	2084264.64	0.0	0.5	Aluminum	28000.00	mg/kg	5.20	228000.0	-	16902.00
CH38-000	748988.31	2084264.64	0.0	0.5	Chromium	21.00	mg/kg	0.16	268.0	-	16.99
CH38-000	748988.31	2084264.64	0.0	0.5	Lithium	16.00	mg/kg	0.52	20400.0	-	11.55
CH38-000	748988.31	2084264.64	0.0	0.5	Methylene chloride	1.40	ug/kg	0.91	2530000.0	39500.0	-
CH38-000	748988.31	2084264.64	0.0	0.5	Nickel	18.00	mg/kg	0.21	20400.0	-	14.91
CH38-001	749021.08	2084249.71	0.0	0.5	Antimony	0.50	mg/kg	0.28	409.0	-	0.47
CH38-001	749021.08	2084249.71	0.0	0.5	Copper	19.00	mg/kg	0.05	40900.0	-	18.06
CH38-001	749021.08	2084249.71	0.0	0.5	Iron	26000.00	mg/kg	1.40	307000.0	-	18037.00
CH38-001	749021.08	2084249.71	0.0	0.5	Manganese	940.00	mg/kg	0.17	3480.0	-	365.08
CH38-001	749021.08	2084249.71	0.0	0.5	Strontium	94.00	mg/kg	0.06	613000.0	-	48.94
CH38-001	749021.08	2084249.71	0.0	0.5	Uranium-235	0.13	pCi/g	0.11	8.0	1900.0	0.09
CH38-001	749021.08	2084249.71	0.0	0.5	Vanadium	55.00	mg/kg	0.47	7150.0	433.0	45.59
CH38-001	749021.08	2084249.71	0.0	0.5	Zinc	85.00	mg/kg	0.46	307000.0	-	73.76
CH38-002	748991.80	2084228.76	0.0	0.5	Copper	21.00	mg/kg	0.05	40900.0	-	18.06
CH38-002	748991.80	2084228.76	0.0	0.5	Strontium	110.00	mg/kg	0.06	613000.0	-	48.94
CH38-002	748991.80	2084228.76	0.0	0.5	Uranium-235	0.13	pCi/g	0.12	8.0	1900.0	0.09
CH38-003	748960.42	2084207.86	0.0	0.5	Antimony	3.96	mg/kg	3.00	409.0	-	0.47
CH38-003	748960.42	2084207.86	0.0	0.5	Arsenic	12.90	mg/kg	4.00	22.2	21.6	10.09
CH38-003	748960.42	2084207.86	0.0	0.5	Barium	813.00	mg/kg	117.00	26400.0	-	141.26
CH38-003	748960.42	2084207.86	0.0	0.5	Copper	78.50	mg/kg	5.00	40900.0	-	18.06
CH38-003	748960.42	2084207.86	0.0	0.5	Iron	34500.00	mg/kg	820.00	307000.0	-	18037.00
CH38-003	748960.42	2084207.86	0.0	0.5	Lead	40.30	mg/kg	9.00	1000.0	25.6	54.62
CH38-003	748960.42	2084207.86	0.0	0.5	Manganese	696.00	mg/kg	11.00	3480.0	-	365.08
CH38-003	748960.42	2084207.86	0.0	0.5	Nickel	43.90	mg/kg	6.00	20400.0	-	14.91
CH38-003	748960.42	2084207.86	0.0	0.5	Strontium	314.00	mg/kg	12.00	613000.0	-	48.94
CH38-003	748960.42	2084207.86	0.0	0.5	Uranium-235	0.18	pCi/g	0.16	8.0	1900.0	0.09
CH38-003	748960.42	2084207.86	0.0	0.5	Xylene	5.00	ug/kg	9.74	2040000.0	-	-
CH38-003	748960.42	2084207.86	0.0	0.5	Zinc	167.00	mg/kg	3.00	307000.0	-	73.76

Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CH38-003	748960.42	2084207.86	16.5	18.5	Barium	377.00	mg/kg	117.00	26400.0	-	289.38
CH38-003	748960.42	2084207.86	16.5	18.5	Copper	93.20	mg/kg	5.00	40900.0	-	38.21
CH38-003	748960.42	2084207.86	16.5	18.5	Uranium-235	0.31	pCi/g	0.10	8.0	1900.0	0.12
CH38-003	748960.42	2084207.86	16.5	18.5	Vanadium	179.00	mg/kg	17.00	7150.0	433.0	88.49
CH38-003	748960.42	2084207.86	18.5	20.5	Arsenic	25.50	mg/kg	4.00	22.2	21.6	13.14
CH38-003	748960.42	2084207.86	18.5	20.5	Barium	383.00	mg/kg	117.00	26400.0	-	289.38
CH38-003	748960.42	2084207.86	18.5	20.5	Cadmium	2.11	mg/kg	2.00	962.0	-	1.70
CH38-003	748960.42	2084207.86	18.5	20.5	Copper	85.50	mg/kg	5.00	40900.0	-	38.21
CH38-003	748960.42	2084207.86	18.5	20.5	Uranium, Total	12.31	mg/kg	6.63	2750.0	67.8	3.04
CH38-003	748960.42	2084207.86	18.5	20.5	Uranium-234	4.15	pCi/g	2.23	300.0	1800.0	2.64
CH38-003	748960.42	2084207.86	18.5	20.5	Uranium-235	0.23	pCi/g	0.15	8.0	1900.0	0.12
CH38-003	748960.42	2084207.86	18.5	20.5	Uranium-238	4.15	pCi/g	2.23	351.0	1600.0	1.49
CH38-003	748960.42	2084207.86	18.5	20.5	Vanadium	170.00	mg/kg	17.00	7150.0	433.0	88.49
CH38-003	748960.42	2084207.86	18.5	20.5	Zinc	180.00	mg/kg	3.00	307000.0	-	139.10
CH38-004	749053.77	2084234.85	0.0	0.5	Uranium, Total	14.13	mg/kg	4.44	2750.0	67.8	5.98
CH38-004	749053.77	2084234.85	0.0	0.5	Uranium-234	4.76	pCi/g	1.50	300.0	1800.0	2.25
CH38-004	749053.77	2084234.85	0.0	0.5	Uranium-235	0.20	pCi/g	0.14	8.0	1900.0	0.09
CH38-004	749053.77	2084234.85	0.0	0.5	Uranium-238	4.76	pCi/g	1.50	351.0	1600.0	2.00
CH38-005	749036.25	2084193.67	0.0	0.5	Strontium	100.00	mg/kg	0.06	613000.0	-	48.94
CH38-005	749036.25	2084193.67	0.0	0.5	Uranium, Total	7.46	mg/kg	5.46	2750.0	67.8	5.98
CH38-005	749036.25	2084193.67	0.0	0.5	Uranium-234	2.51	pCi/g	1.84	300.0	1800.0	2.25
CH38-005	749036.25	2084193.67	0.0	0.5	Uranium-235	0.21	pCi/g	0.18	8.0	1900.0	0.09
CH38-005	749036.25	2084193.67	0.0	0.5	Uranium-238	2.51	pCi/g	1.84	351.0	1600.0	2.00
CH38-006	748994.04	2084202.44	0.0	0.5	Arsenic	13.40	mg/kg	4.00	22.2	21.6	10.09
CH38-006	748994.04	2084202.44	0.0	0.5	Barium	615.00	mg/kg	117.00	26400.0	-	141.26
CH38-006	748994.04	2084202.44	0.0	0.5	Copper	53.20	mg/kg	5.00	40900.0	-	18.06
CH38-006	748994.04	2084202.44	0.0	0.5	Iron	37000.00	mg/kg	820.00	307000.0	-	18037.00
CH38-006	748994.04	2084202.44	0.0	0.5	Manganese	537.00	mg/kg	11.00	3480.0	-	365.08
CH38-006	748994.04	2084202.44	0.0	0.5	Nickel	55.20	mg/kg	6.00	20400.0	-	14.91

Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CH38-006	748994.04	2084202.44	0.0	0.5	Strontium	189.00	mg/kg	12.00	613000.0	-	48.94
CH38-006	748994.04	2084202.44	0.0	0.5	Tin	4.40	mg/kg	3.00	613000.0	-	2.90
CH38-006	748994.04	2084202.44	0.0	0.5	Uranium, Total	8.14	mg/kg	6.82	2750.0	67.8	5.98
CH38-006	748994.04	2084202.44	0.0	0.5	Uranium-234	2.74	pCi/g	2.30	300.0	1800.0	2.25
CH38-006	748994.04	2084202.44	0.0	0.5	Uranium-235	0.23	pCi/g	0.16	8.0	1900.0	0.09
CH38-006	748994.04	2084202.44	0.0	0.5	Uranium-238	2.74	pCi/g	2.30	351.0	1600.0	2.00
CH38-006	748994.04	2084202.44	0.0	0.5	Zinc	106.00	mg/kg	3.00	307000.0	-	73.76
CH38-006	748994.04	2084202.44	16.5	18.5	Barium	310.00	mg/kg	117.00	26400.0	-	289.38
CH38-006	748994.04	2084202.44	16.5	18.5	Copper	101.00	mg/kg	5.00	40900.0	-	38.21
CH38-006	748994.04	2084202.44	16.5	18.5	Lead	25.90	mg/kg	9.00	1000.0	25.6	24.97
CH38-006	748994.04	2084202.44	16.5	18.5	Vanadium	167.00	mg/kg	17.00	7150.0	433.0	88.49
CH38-006	748994.04	2084202.44	18.5	20.5	Arsenic	20.10	mg/kg	4.00	22.2	21.6	13.14
CH38-006	748994.04	2084202.44	18.5	20.5	Barium	2250.00	mg/kg	117.00	26400.0	-	289.38
CH38-006	748994.04	2084202.44	18.5	20.5	Copper	52.30	mg/kg	5.00	40900.0	-	38.21
CH38-006	748994.04	2084202.44	18.5	20.5	Uranium, Total	7.07	mg/kg	4.98	2750.0	67.8	3.04
CH38-006	748994.04	2084202.44	18.5	20.5	Uranium-235	0.28	pCi/g	0.14	8.0	1900.0	0.12
CH38-006	748994.04	2084202.44	18.5	20.5	Uranium-238	2.38	pCi/g	1.68	351.0	1600.0	1.49
CH38-007	748965.93	2084172.01	0.0	0.5	Aluminum	23000.00	mg/kg	4.60	228000.0	-	16902.00
CH38-007	748965.93	2084172.01	0.0	0.5	Chromium	36.00	mg/kg	0.14	268.0	-	16.99
CH38-007	748965.93	2084172.01	0.0	0.5	Iron	20000.00	mg/kg	1.30	307000.0	-	18037.00
CH38-007	748965.93	2084172.01	0.0	0.5	Lithium	18.00	mg/kg	0.46	20400.0	-	11.55
CH38-007	748965.93	2084172.01	0.0	0.5	Manganese	510.00	mg/kg	0.16	3480.0	-	365.08
CH38-007	748965.93	2084172.01	0.0	0.5	Nickel	23.00	mg/kg	0.18	20400.0	-	14.91
CH38-007	748965.93	2084172.01	0.0	0.5	Uranium, Total	21.10	mg/kg	7.13	2750.0	67.8	5.98
CH38-007	748965.93	2084172.01	0.0	0.5	Uranium-234	7.10	pCi/g	2.40	300.0	1800.0	2.25
CH38-007	748965.93	2084172.01	0.0	0.5	Uranium-235	0.30	pCi/g	0.17	8.0	1900.0	0.09
CH38-007	748965.93	2084172.01	0.0	0.5	Uranium-238	7.10	pCi/g	2.40	351.0	1600.0	2.00
CH38-007	748965.93	2084172.01	0.0	0.5	Zinc	74.00	mg/kg	0.42	307000.0	-	73.76
CH38-008	749086.59	2084219.85	0.0	0.5	Ethylbenzene	11.30	ug/kg	4.93	4250000.0	-	-



Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CH38-008	749086.59	2084219.85	0.0	0.5	Uranium, Total	20.50	mg/kg	6.47	2750.0	67.8	5.98
CH38-008	749086.59	2084219.85	0.0	0.5	Uranium-234	6.90	pCi/g	2.18	300.0	1800.0	2.25
CH38-008	749086.59	2084219.85	0.0	0.5	Uranium-235	0.27	pCi/g	0.18	8.0	1900.0	0.09
CH38-008	749086.59	2084219.85	0.0	0.5	Uranium-238	6.90	pCi/g	2.18	351.0	1600.0	2.00
CH38-008	749086.59	2084219.85	0.0	0.5	Xylene	58.40	ug/kg	9.85	2040000.0	-	-
CH38-008	749086.59	2084219.85	0.0	0.5	Zinc	180.00	mg/kg	0.44	307000.0	-	73.76
CH38-009	749057.36	2084198.92	0.0	0.5	Naphthalene	98.20	ug/kg	5.54	3090000.0	-	-
CH38-009	749057.36	2084198.92	0.0	0.5	Strontium	170.00	mg/kg	0.06	613000.0	-	48.94
CH38-010	749025.85	2084178.11	0.0	0.5	Acetone	9.70	ug/kg	5.00	102000000.0	211000.0	-
CH38-010	749025.85	2084178.11	0.0	0.5	Americium-241	0.06	pCi/g	0.06	76.0	1900.0	0.02
CH38-010	749025.85	2084178.11	0.0	0.5	Methylene chloride	2.20	ug/kg	0.87	2530000.0	39500.0	-
CH38-010	749025.85	2084178.11	0.0	0.5	Naphthalene	11.00	ug/kg	0.94	3090000.0	-	-
CH38-010	749025.85	2084178.11	0.0	0.5	Strontium	120.00	mg/kg	0.07	613000.0	-	48.94
CH38-011	749005.42	2084150.56	0.0	0.5	Uranium, Total	10.29	mg/kg	5.93	2750.0	67.8	5.98
CH38-011	749005.42	2084150.56	0.0	0.5	Uranium-234	3.46	pCi/g	2.00	300.0	1800.0	2.25
CH38-011	749005.42	2084150.56	0.0	0.5	Uranium-235	0.23	pCi/g	0.15	8.0	1900.0	0.09
CH38-011	749005.42	2084150.56	0.0	0.5	Uranium-238	3.46	pCi/g	2.00	351.0	1600.0	2.00
CH38-012	749152.00	2084225.00	0.0	0.5	Arsenic	10.30	mg/kg	4.00	22.2	21.6	10.09
CH38-012	749152.00	2084225.00	0.0	0.5	Barium	833.00	mg/kg	117.00	26400.0	-	141.26
CH38-012	749152.00	2084225.00	0.0	0.5	Copper	105.00	mg/kg	5.00	40900.0	-	18.06
CH38-012	749152.00	2084225.00	0.0	0.5	Iron	26300.00	mg/kg	820.00	307000.0	-	18037.00
CH38-012	749152.00	2084225.00	0.0	0.5	Manganese	485.00	mg/kg	11.00	3480.0	-	365.08
CH38-012	749152.00	2084225.00	0.0	0.5	Nickel	25.90	mg/kg	6.00	20400.0	-	14.91
CH38-012	749152.00	2084225.00	0.0	0.5	Strontium	271.00	mg/kg	12.00	613000.0	-	48.94
CH38-012	749152.00	2084225.00	0.0	0.5	Tin	3.52	mg/kg	3.00	613000.0	-	2.90
CH38-012	749152.00	2084225.00	0.0	0.5	Uranium-235	0.15	pCi/g	0.14	8.0	1900.0	0.09
CH38-012	749152.00	2084225.00	0.0	0.5	Zinc	91.30	mg/kg	3.00	307000.0	-	73.76
CH38-013	749119.32	2084204.94	0.0	0.5	Arsenic	13.60	mg/kg	4.00	22.2	21.6	10.09

Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CH38-013	749119.32	2084204.94	0.0	0.5	Barium	805.00	mg/kg	117.00	26400.0	-	141.26
CH38-013	749119.32	2084204.94	0.0	0.5	Copper	69.30	mg/kg	5.00	40900.0	-	18.06
CH38-013	749119.32	2084204.94	0.0	0.5	Iron	31300.00	mg/kg	820.00	307000.0	-	18037.00
CH38-013	749119.32	2084204.94	0.0	0.5	Manganese	507.00	mg/kg	11.00	3480.0	-	365.08
CH38-013	749119.32	2084204.94	0.0	0.5	Nickel	43.60	mg/kg	6.00	20400.0	-	14.91
CH38-013	749119.32	2084204.94	0.0	0.5	Strontium	280.00	mg/kg	12.00	613000.0	-	48.94
CH38-013	749119.32	2084204.94	0.0	0.5	Tin	3.11	mg/kg	3.00	613000.0	-	2.90
CH38-013	749119.32	2084204.94	0.0	0.5	Uranium-235	0.25	pCi/g	0.18	8.0	1900.0	0.09
CH38-013	749119.32	2084204.94	0.0	0.5	Zinc	131.00	mg/kg	3.00	307000.0	-	73.76
CH38-013	749119.32	2084204.94	0.0	0.5	Uranium, Total	12.06	mg/kg	5.82	2750.0	67.8	3.04
CH38-014	749090.01	2084184.02	0.0	0.5	Strontium	88.00	mg/kg	0.06	613000.0	-	48.94
CH38-014	749090.01	2084184.02	0.0	0.5	Uranium, Total	15.49	mg/kg	6.85	2750.0	67.8	5.98
CH38-014	749090.01	2084184.02	0.0	0.5	Uranium-234	5.22	pCi/g	2.31	300.0	1800.0	2.25
CH38-014	749090.01	2084184.02	0.0	0.5	Uranium-235	0.27	pCi/g	0.21	8.0	1900.0	0.09
CH38-014	749090.01	2084184.02	0.0	0.5	Uranium-238	5.22	pCi/g	2.31	351.0	1600.0	2.00
CH38-015	749061.79	2084152.46	0.0	0.5	Aluminum	36000.00	mg/kg	5.00	228000.0	-	16902.00
CH38-015	749061.79	2084152.46	0.0	0.5	Barium	250.00	mg/kg	0.38	26400.0	-	141.26
CH38-015	749061.79	2084152.46	0.0	0.5	Beryllium	1.70	mg/kg	0.10	921.0	2.2	0.97
CH38-015	749061.79	2084152.46	0.0	0.5	Chromium	29.00	mg/kg	0.15	268.0	-	16.99
CH38-015	749061.79	2084152.46	0.0	0.5	Iron	24000.00	mg/kg	1.40	307000.0	-	18037.00
CH38-015	749061.79	2084152.46	0.0	0.5	Lithium	21.00	mg/kg	0.50	20400.0	-	11.55
CH38-015	749061.79	2084152.46	0.0	0.5	Nickel	21.00	mg/kg	0.20	20400.0	-	14.91
CH38-015	749061.79	2084152.46	0.0	0.5	Strontium	62.00	mg/kg	0.06	613000.0	-	48.94
CH38-015	749061.79	2084152.46	0.0	0.5	Uranium, Total	14.71	mg/kg	6.26	2750.0	67.8	5.98
CH38-015	749061.79	2084152.46	0.0	0.5	Uranium-234	4.95	pCi/g	2.11	300.0	1800.0	2.25
CH38-015	749061.79	2084152.46	0.0	0.5	Uranium-235	0.26	pCi/g	0.17	8.0	1900.0	0.09

Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CH38-015	749061.79	2084152.46	0.0	0.5	Uranium-238	4.95	pCi/g	2.11	351.0	1600.0	2.00
CH38-016	749031.40	2084142.14	0.0	0.5	Strontium	56.00	mg/kg	0.06	613000.0	-	48.94
CH38-016	749031.40	2084142.14	2.5	4.5	Uranium, Total	14.58	mg/kg	6.19	2750.0	67.8	3.04
CH38-016	749031.40	2084142.14	2.5	4.5	Uranium-234	4.91	pCi/g	2.08	300.0	1800.0	2.64
CH38-016	749031.40	2084142.14	2.5	4.5	Uranium-235	0.27	pCi/g	0.17	8.0	1900.0	0.12
CH38-016	749031.40	2084142.14	2.5	4.5	Uranium-238	4.91	pCi/g	2.08	351.0	1600.0	1.49
CH38-017	749152.10	2084190.00	0.0	0.5	Arsenic	11.60	mg/kg	4.00	22.2	21.6	10.09
CH38-017	749152.10	2084190.00	0.0	0.5	Barium	567.00	mg/kg	117.00	26400.0	-	141.26
CH38-017	749152.10	2084190.00	0.0	0.5	Copper	75.40	mg/kg	5.00	40900.0	-	18.06
CH38-017	749152.10	2084190.00	0.0	0.5	Iron	32600.00	mg/kg	820.00	307000.0	-	18037.00
CH38-017	749152.10	2084190.00	0.0	0.5	Manganese	483.00	mg/kg	11.00	3480.0	-	365.08
CH38-017	749152.10	2084190.00	0.0	0.5	Nickel	48.30	mg/kg	6.00	20400.0	-	14.91
CH38-017	749152.10	2084190.00	0.0	0.5	Strontium	205.00	mg/kg	12.00	613000.0	-	48.94
CH38-017	749152.10	2084190.00	0.0	0.5	Tin	3.07	mg/kg	3.00	613000.0	-	2.90
CH38-017	749152.10	2084190.00	0.0	0.5	Zinc	115.00	mg/kg	3.00	307000.0	-	73.76
CH38-018	749122.81	2084169.06	0.0	0.5	Arsenic	12.60	mg/kg	4.00	22.2	21.6	10.09
CH38-018	749122.81	2084169.06	0.0	0.5	Barium	679.00	mg/kg	117.00	26400.0	-	141.26
CH38-018	749122.81	2084169.06	0.0	0.5	Copper	84.70	mg/kg	5.00	40900.0	-	18.06
CH38-018	749122.81	2084169.06	0.0	0.5	Iron	31400.00	mg/kg	820.00	307000.0	-	18037.00
CH38-018	749122.81	2084169.06	0.0	0.5	Manganese	450.00	mg/kg	11.00	3480.0	-	365.08
CH38-018	749122.81	2084169.06	0.0	0.5	Nickel	39.50	mg/kg	6.00	20400.0	-	14.91
CH38-018	749122.81	2084169.06	0.0	0.5	Strontium	255.00	mg/kg	12.00	613000.0	-	48.94
CH38-018	749122.81	2084169.06	0.0	0.5	Zinc	125.00	mg/kg	3.00	307000.0	-	73.76
CH38-018	749122.81	2084169.06	2.5	2.8	Lead	31.00	mg/kg	0.29	1000.0	25.6	24.97
CH38-018	749122.81	2084169.06	2.5	2.8	Toluene	14.10	ug/kg	5.05	31300000.0	128000.0	-
CH38-018	749122.81	2084169.06	2.5	2.8	Uranium, Total	4.80	mg/kg	3.83	2750.0	67.8	3.04
CH38-018	749122.81	2084169.06	2.5	2.8	Uranium-235	0.19	pCi/g	0.13	8.0	1900.0	0.12
CH38-018	749122.81	2084169.06	2.5	2.8	Uranium-238	1.62	pCi/g	1.29	351.0	1600.0	1.49
CH38-019	749093.53	2084148.14	0.0	0.5	Chromium	19.00	mg/kg	0.12	268.0	-	16.99

Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CH38-020	749155.57	2084154.13	0.0	0.5	Arsenic	14.20	mg/kg	4.00	22.2	21.6	10.09
CH38-020	749155.57	2084154.13	0.0	0.5	Barium	750.00	mg/kg	117.00	26400.0	-	141.26
CH38-020	749155.57	2084154.13	0.0	0.5	Copper	78.00	mg/kg	5.00	40900.0	-	18.06
CH38-020	749155.57	2084154.13	0.0	0.5	Iron	30500.00	mg/kg	820.00	307000.0	-	18037.00
CH38-020	749155.57	2084154.13	0.0	0.5	Manganese	536.00	mg/kg	11.00	3480.0	-	365.08
CH38-020	749155.57	2084154.13	0.0	0.5	Nickel	36.30	mg/kg	6.00	20400.0	-	14.91
CH38-020	749155.57	2084154.13	0.0	0.5	Strontium	338.00	mg/kg	12.00	613000.0	-	48.94
CH38-020	749155.57	2084154.13	0.0	0.5	Uranium, Total	10.18	mg/kg	5.21	2750.0	67.8	5.98
CH38-020	749155.57	2084154.13	0.0	0.5	Uranium-234	3.43	pCi/g	1.76	300.0	1800.0	2.25
CH38-020	749155.57	2084154.13	0.0	0.5	Uranium-235	0.17	pCi/g	0.14	8.0	1900.0	0.09
CH38-020	749155.57	2084154.13	0.0	0.5	Uranium-238	3.43	pCi/g	1.76	351.0	1600.0	2.00
CH38-020	749155.57	2084154.13	0.0	0.5	Zinc	135.00	mg/kg	3.00	307000.0	-	73.76
CH38-021	748984.19	2084144.83	0.0	0.3	Antimony	4.38	mg/kg	3.00	409.0	-	0.47
CH38-021	748984.19	2084144.83	0.0	0.3	Arsenic	10.60	mg/kg	4.00	22.2	21.6	10.09
CH38-021	748984.19	2084144.83	0.0	0.3	Barium	752.00	mg/kg	117.00	26400.0	-	141.26
CH38-021	748984.19	2084144.83	0.0	0.3	Copper	60.70	mg/kg	5.00	40900.0	-	18.06
CH38-021	748984.19	2084144.83	0.0	0.3	Iron	32700.00	mg/kg	820.00	307000.0	-	18037.00
CH38-021	748984.19	2084144.83	0.0	0.3	Manganese	689.00	mg/kg	11.00	3480.0	-	365.08
CH38-021	748984.19	2084144.83	0.0	0.3	Nickel	38.70	mg/kg	6.00	20400.0	-	14.91
CH38-021	748984.19	2084144.83	0.0	0.3	Strontium	441.00	mg/kg	12.00	613000.0	-	48.94
CH38-021	748984.19	2084144.83	0.0	0.3	Uranium, Total	12.89	mg/kg	6.60	2750.0	67.8	5.98
CH38-021	748984.19	2084144.83	0.0	0.3	Uranium-234	4.34	pCi/g	2.22	300.0	1800.0	2.25
CH38-021	748984.19	2084144.83	0.0	0.3	Uranium-235	0.20	pCi/g	0.16	8.0	1900.0	0.09
CH38-021	748984.19	2084144.83	0.0	0.3	Uranium-238	4.34	pCi/g	2.22	351.0	1600.0	2.00
CH38-021	748984.19	2084144.83	0.0	0.3	Zinc	130.00	mg/kg	3.00	307000.0	-	73.76
CH38-021	748984.19	2084144.83	2.5	4.5	Uranium, Total	4.59	mg/kg	4.37	2750.0	67.8	3.04
CH38-021	748984.19	2084144.83	2.5	4.5	Uranium-238	1.54	pCi/g	1.47	351.0	1600.0	1.49
CH38-022	749109.25	2084170.17	0.0	0.5	Aluminum	26000.00	mg/kg	5.40	228000.0	-	16902.00
CH38-022	749109.25	2084170.17	0.0	0.5	Beryllium	1.00	mg/kg	0.11	921.0	2.2	0.97

Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CH38-022	749109.25	2084170.17	0.0	0.5	Chromium	22.00	mg/kg	0.17	268.0	-	16.99
CH38-022	749109.25	2084170.17	0.0	0.5	Iron	19000.00	mg/kg	1.60	307000.0	-	18037.00
CH38-022	749109.25	2084170.17	0.0	0.5	Lithium	17.00	mg/kg	0.54	20400.0	-	11.55
CH38-022	749109.25	2084170.17	0.0	0.5	Nickel	16.00	mg/kg	0.22	20400.0	-	14.91
CH38-022	749109.25	2084170.17	0.0	0.5	Uranium, Total	13.16	mg/kg	5.82	2750.0	67.8	5.98
CH38-022	749109.25	2084170.17	0.0	0.5	Uranium-234	4.43	pCi/g	1.96	300.0	1800.0	2.25
CH38-022	749109.25	2084170.17	0.0	0.5	Uranium-235	0.19	pCi/g	0.18	8.0	1900.0	0.09
CH38-022	749109.25	2084170.17	0.0	0.5	Uranium-238	4.43	pCi/g	1.96	351.0	1600.0	2.00
CH38-022	749109.25	2084170.17	4.5	6.5	Strontium	460.00	mg/kg	0.06	613000.0	-	211.38
CH38-023	749139.30	2084208.91	0.0	0.5	Methylene chloride	1.50	ug/kg	0.83	2530000.0	39500.0	-
CH38-023	749139.30	2084208.91	0.0	0.5	Plutonium-239/240	0.09	pCi/g	0.09	50.0	3800.0	0.07
CH38-023	749139.30	2084208.91	4.5	4.8	Uranium, Total	5.37	mg/kg	3.84	2750.0	67.8	3.04
CH38-023	749139.30	2084208.91	4.5	4.8	Uranium-235	0.16	pCi/g	0.12	8.0	1900.0	0.12
CH38-023	749139.30	2084208.91	4.5	4.8	Uranium-238	1.81	pCi/g	1.29	351.0	1600.0	1.49
CH38-024	748977.60	2084215.96	0.0	0.5	Naphthalene	103.00	ug/kg	5.24	3090000.0	-	-
CH38-024	748977.60	2084215.96	0.0	0.5	Strontium	94.00	mg/kg	0.06	613000.0	-	48.94
CH38-024	748977.60	2084215.96	0.0	0.5	Uranium, Total	10.54	mg/kg	3.70	2750.0	67.8	5.98
CH38-024	748977.60	2084215.96	0.0	0.5	Uranium-234	3.55	pCi/g	1.25	300.0	1800.0	2.25
CH38-024	748977.60	2084215.96	0.0	0.5	Uranium-238	3.55	pCi/g	1.25	351.0	1600.0	2.00
CH38-024	748977.60	2084215.96	4.5	6.5	Naphthalene	40.50	ug/kg	5.75	3090000.0	-	-
CH38-024	748977.60	2084215.96	4.5	6.5	Uranium, Total	9.20	mg/kg	5.06	2750.0	67.8	3.04
CH38-024	748977.60	2084215.96	4.5	6.5	Uranium-234	3.10	pCi/g	1.70	300.0	1800.0	2.64
CH38-024	748977.60	2084215.96	4.5	6.5	Uranium-238	3.10	pCi/g	1.70	351.0	1600.0	1.49
CH38-025	748991.75	2084172.13	0.0	0.5	Strontium	120.00	mg/kg	0.06	613000.0	-	48.94
CH38-025	748991.75	2084172.13	0.0	0.5	Uranium-235	0.13	pCi/g	0.12	8.0	1900.0	0.09
CH38-025	748991.75	2084172.13	2.5	4.5	Uranium, Total	10.70	mg/kg	3.86	2750.0	67.8	3.04
CH38-025	748991.75	2084172.13	2.5	4.5	Uranium-234	3.60	pCi/g	1.30	300.0	1800.0	2.64
CH38-025	748991.75	2084172.13	2.5	4.5	Uranium-238	3.60	pCi/g	1.30	351.0	1600.0	1.49

Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CH38-026	749093.62	2084168.98	0.0	0.5	Chromium	18.00	mg/kg	0.18	268.0	-	16.99
CH38-026	749093.62	2084168.98	0.0	0.5	Lithium	15.00	mg/kg	0.58	20400.0	-	11.55
CH38-026	749093.62	2084168.98	0.0	0.5	Nickel	17.00	mg/kg	0.23	20400.0	-	14.91
CH38-026	749093.62	2084168.98	0.0	0.5	Strontium	220.00	mg/kg	0.07	613000.0	-	48.94
CH38-026	749093.62	2084168.98	0.0	0.5	Uranium, Total	6.57	mg/kg	3.63	2750.0	67.8	5.98
CH38-026	749093.62	2084168.98	0.0	0.5	Uranium-238	2.21	pCi/g	1.22	351.0	1600.0	2.00
CH38-026	749093.62	2084168.98	2.5	4.5	Uranium, Total	15.48	mg/kg	5.58	2750.0	67.8	3.04
CH38-026	749093.62	2084168.98	2.5	4.5	Uranium-234	5.21	pCi/g	1.88	300.0	1800.0	2.64
CH38-026	749093.62	2084168.98	2.5	4.5	Uranium-235	0.31	pCi/g	0.16	8.0	1900.0	0.12
CH38-026	749093.62	2084168.98	2.5	4.5	Uranium-238	5.21	pCi/g	1.88	351.0	1600.0	1.49
CH38-028	749102.29	2084187.74	6.5	8.5	Arsenic	13.50	mg/kg	4.00	22.2	21.6	13.14
CH38-028	749102.29	2084187.74	6.5	8.5	Barium	905.00	mg/kg	117.00	26400.0	-	289.38
CH38-028	749102.29	2084187.74	6.5	8.5	Copper	47.40	mg/kg	5.00	40900.0	-	38.21
CH38-028	749102.29	2084187.74	6.5	8.5	Naphthalene	11.50	ug/kg	5.73	3090000.0	-	-
CH38-028	749102.29	2084187.74	6.5	8.5	Uranium, Total	11.86	mg/kg	6.09	2750.0	67.8	3.04
CH38-028	749102.29	2084187.74	6.5	8.5	Uranium-234	3.99	pCi/g	2.05	300.0	1800.0	2.64
CH38-028	749102.29	2084187.74	6.5	8.5	Uranium-235	0.24	pCi/g	0.16	8.0	1900.0	0.12
CH38-028	749102.29	2084187.74	6.5	8.5	Uranium-238	3.99	pCi/g	2.05	351.0	1600.0	1.49
CH38-028	749102.29	2084187.74	8.5	10.5	Barium	632.00	mg/kg	117.00	26400.0	-	289.38
CH38-028	749102.29	2084187.74	8.5	10.5	Copper	76.60	mg/kg	5.00	40900.0	-	38.21
CH38-028	749102.29	2084187.74	8.5	10.5	Naphthalene	102.00	ug/kg	5.97	3090000.0	-	-
CH38-028	749102.29	2084187.74	8.5	10.5	Uranium, Total	14.81	mg/kg	6.10	2750.0	67.8	3.04
CH38-028	749102.29	2084187.74	8.5	10.5	Uranium-234	4.99	pCi/g	2.05	300.0	1800.0	2.64
CH38-028	749102.29	2084187.74	8.5	10.5	Uranium-235	0.22	pCi/g	0.18	8.0	1900.0	0.12
CH38-028	749102.29	2084187.74	8.5	10.5	Uranium-238	4.99	pCi/g	2.05	351.0	1600.0	1.49
CH38-028	749102.29	2084187.74	8.5	10.5	Vanadium	121.00	mg/kg	17.00	7150.0	433.0	88.49
CH38-029	749012.77	2084194.94	6.5	8.5	Barium	511.00	mg/kg	117.00	26400.0	-	289.38
CH38-029	749012.77	2084194.94	6.5	8.5	Copper	39.80	mg/kg	5.00	40900.0	-	38.21
CH38-029	749012.77	2084194.94	6.5	8.5	Strontium	362.00	mg/kg	12.00	613000.0	-	211.38

Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CH38-029	749012.77	2084194.94	6.5	8.5	Uranium-235	0.18	pCi/g	0.18	8.0	1900.0	0.12
CH38-029	749012.77	2084194.94	8.5	10.5	Arsenic	14.90	mg/kg	4.00	22.2	21.6	13.14
CH38-029	749012.77	2084194.94	8.5	10.5	Barium	583.00	mg/kg	117.00	26400.0	-	289.38
CH38-029	749012.77	2084194.94	8.5	10.5	Copper	61.70	mg/kg	5.00	40900.0	-	38.21
CH38-029	749012.77	2084194.94	8.5	10.5	Vanadium	143.00	mg/kg	17.00	7150.0	433.0	88.49
CH38-030	749022.42	2084162.73	4.5	6.5	Acetone	5.90	ug/kg	5.00	102000000.0	211000.0	-
CH38-030	749022.42	2084162.73	4.5	6.5	Methylene chloride	1.90	ug/kg	0.87	2530000.0	39500.0	-
CH38-030	749022.42	2084162.73	4.5	6.5	Naphthalene	3.50	ug/kg	0.93	3090000.0	-	-
CH38-031	749091.57	2084207.48	2.5	4.5	Uranium, Total	17.74	mg/kg	5.19	2750.0	67.8	3.04
CH38-031	749091.57	2084207.48	2.5	4.5	Uranium-234	5.97	pCi/g	1.75	300.0	1800.0	2.64
CH38-031	749091.57	2084207.48	2.5	4.5	Uranium-235	0.17	pCi/g	0.17	8.0	1900.0	0.12
CH38-031	749091.57	2084207.48	2.5	4.5	Uranium-238	5.97	pCi/g	1.75	351.0	1600.0	1.49
CH38-031	749091.57	2084207.48	4.5	6.5	Uranium, Total	9.60	mg/kg	4.88	2750.0	67.8	3.04
CH38-031	749091.57	2084207.48	4.5	6.5	Uranium-234	3.23	pCi/g	1.64	300.0	1800.0	2.64
CH38-031	749091.57	2084207.48	4.5	6.5	Uranium-235	0.22	pCi/g	0.17	8.0	1900.0	0.12
CH38-031	749091.57	2084207.48	4.5	6.5	Uranium-238	3.23	pCi/g	1.64	351.0	1600.0	1.49
CH38-032	748976.36	2084217.87	0.0	0.5	Arsenic	10.80	mg/kg	4.00	22.2	21.6	10.09
CH38-032	748976.36	2084217.87	0.0	0.5	Barium	631.00	mg/kg	117.00	26400.0	-	141.26
CH38-032	748976.36	2084217.87	0.0	0.5	Copper	95.60	mg/kg	5.00	40900.0	-	18.06
CH38-032	748976.36	2084217.87	0.0	0.5	Iron	37400.00	mg/kg	820.00	307000.0	-	18037.00
CH38-032	748976.36	2084217.87	0.0	0.5	Lead	26.40	mg/kg	9.00	1000.0	25.6	54.62
CH38-032	748976.36	2084217.87	0.0	0.5	Manganese	861.00	mg/kg	11.00	3480.0	-	365.08
CH38-032	748976.36	2084217.87	0.0	0.5	Nickel	45.10	mg/kg	6.00	20400.0	-	14.91
CH38-032	748976.36	2084217.87	0.0	0.5	Strontium	312.00	mg/kg	12.00	613000.0	-	48.94
CH38-032	748976.36	2084217.87	0.0	0.5	Zinc	171.00	mg/kg	3.00	307000.0	-	73.76
CH38-032	748976.36	2084217.87	16.5	18.5	Barium	299.00	mg/kg	117.00	26400.0	-	289.38
CH38-032	748976.36	2084217.87	16.5	18.5	Copper	62.30	mg/kg	5.00	40900.0	-	38.21
CH38-032	748976.36	2084217.87	16.5	18.5	Uranium-235	0.23	pCi/g	0.13	8.0	1900.0	0.12



Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CH38-032	748976.36	2084217.87	16.5	18.5	Vanadium	165.00	mg/kg	17.00	7150.0	433.0	88.49
CH38-032	748976.36	2084217.87	18.5	20.5	Barium	364.00	mg/kg	117.00	26400.0	-	289.38
CH38-032	748976.36	2084217.87	18.5	20.5	Copper	105.00	mg/kg	5.00	40900.0	-	38.21
CH38-032	748976.36	2084217.87	18.5	20.5	Uranium, Total	9.47	mg/kg	6.80	2750.0	67.8	3.04
CH38-032	748976.36	2084217.87	18.5	20.5	Uranium-234	3.19	pCi/g	2.29	300.0	1800.0	2.64
CH38-032	748976.36	2084217.87	18.5	20.5	Uranium-235	0.20	pCi/g	0.14	8.0	1900.0	0.12
CH38-032	748976.36	2084217.87	18.5	20.5	Uranium-238	3.19	pCi/g	2.29	351.0	1600.0	1.49
CH38-032	748976.36	2084217.87	18.5	20.5	Vanadium	176.00	mg/kg	17.00	7150.0	433.0	88.49
CH38-033	748977.53	2084192.32	0.0	0.5	Barium	649.00	mg/kg	117.00	26400.0	-	141.26
CH38-033	748977.53	2084192.32	0.0	0.5	Copper	90.20	mg/kg	5.00	40900.0	-	18.06
CH38-033	748977.53	2084192.32	0.0	0.5	Iron	36900.00	mg/kg	820.00	307000.0	-	18037.00
CH38-033	748977.53	2084192.32	0.0	0.5	Manganese	603.00	mg/kg	11.00	3480.0	-	365.08
CH38-033	748977.53	2084192.32	0.0	0.5	Nickel	49.20	mg/kg	6.00	20400.0	-	14.91
CH38-033	748977.53	2084192.32	0.0	0.5	Strontium	241.00	mg/kg	12.00	613000.0	-	48.94
CH38-033	748977.53	2084192.32	0.0	0.5	Uranium, Total	14.66	mg/kg	5.80	2750.0	67.8	5.98
CH38-033	748977.53	2084192.32	0.0	0.5	Uranium-234	4.94	pCi/g	1.95	300.0	1800.0	2.25
CH38-033	748977.53	2084192.32	0.0	0.5	Uranium-235	0.23	pCi/g	0.16	8.0	1900.0	0.09
CH38-033	748977.53	2084192.32	0.0	0.5	Uranium-238	4.94	pCi/g	1.95	351.0	1600.0	2.00
CH38-033	748977.53	2084192.32	0.0	0.5	Vanadium	102.00	mg/kg	17.00	7150.0	433.0	45.59
CH38-033	748977.53	2084192.32	0.0	0.5	Zinc	133.00	mg/kg	3.00	307000.0	-	73.76
CH38-033	748977.53	2084192.32	0.0	0.5	Arsenic	14.90	mg/kg	4.00	22.2	21.6	13.14
CH38-033	748977.53	2084192.32	16.5	18.5	Barium	650.00	mg/kg	117.00	26400.0	-	289.38
CH38-033	748977.53	2084192.32	16.5	18.5	Copper	61.60	mg/kg	5.00	40900.0	-	38.21
CH38-033	748977.53	2084192.32	16.5	18.5	Strontium	267.00	mg/kg	12.00	613000.0	-	211.38
CH38-033	748977.53	2084192.32	16.5	18.5	Uranium, Total	14.84	mg/kg	7.69	2750.0	67.8	3.04
CH38-033	748977.53	2084192.32	16.5	18.5	Uranium-234	5.00	pCi/g	2.59	300.0	1800.0	2.64
CH38-033	748977.53	2084192.32	16.5	18.5	Uranium-235	0.32	pCi/g	0.17	8.0	1900.0	0.12
CH38-033	748977.53	2084192.32	16.5	18.5	Uranium-238	5.00	pCi/g	2.59	351.0	1600.0	1.49
CH38-033	748977.53	2084192.32	18.5	20.5	Barium	815.00	mg/kg	117.00	26400.0	-	289.38



Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CH38-033	748977.53	2084192.32	18.5	20.5	Copper	118.00	mg/kg	5.00	40900.0	-	38.21
CH38-033	748977.53	2084192.32	18.5	20.5	Uranium, Total	6.28	mg/kg	3.77	2750.0	67.8	3.04
CH38-033	748977.53	2084192.32	18.5	20.5	Uranium-235	0.22	pCi/g	0.18	8.0	1900.0	0.12
CH38-033	748977.53	2084192.32	18.5	20.5	Uranium-238	2.11	pCi/g	1.27	351.0	1600.0	1.49
CH38-033	748977.53	2084192.32	18.5	20.5	Vanadium	124.00	mg/kg	17.00	7150.0	433.0	88.49
CH39-000	749177.80	2084209.50	0.0	0.5	Acetone	5.30	ug/kg	4.70	102000000.0	211000.0	-
CH39-000	749177.80	2084209.50	0.0	0.5	Methylene chloride	2.50	ug/kg	0.82	2530000.0	39500.0	-
CH39-000	749177.80	2084209.50	0.0	0.5	Strontium	58.00	mg/kg	0.06	613000.0	-	48.94
CH39-000	749177.80	2084209.50	0.0	0.5	Zinc	92.00	mg/kg	0.43	307000.0	-	73.76
CH39-001	749182.80	2084176.51	0.0	0.5	Arsenic	11.70	mg/kg	4.00	22.2	21.6	10.09
CH39-001	749182.80	2084176.51	0.0	0.5	Barium	752.00	mg/kg	117.00	26400.0	-	141.26
CH39-001	749182.80	2084176.51	0.0	0.5	Copper	77.10	mg/kg	5.00	40900.0	-	18.06
CH39-001	749182.80	2084176.51	0.0	0.5	Iron	30600.00	mg/kg	820.00	307000.0	-	18037.00
CH39-001	749182.80	2084176.51	0.0	0.5	Manganese	539.00	mg/kg	11.00	3480.0	-	365.08
CH39-001	749182.80	2084176.51	0.0	0.5	Nickel	35.40	mg/kg	6.00	20400.0	-	14.91
CH39-001	749182.80	2084176.51	0.0	0.5	Strontium	256.00	mg/kg	12.00	613000.0	-	48.94
CH39-001	749182.80	2084176.51	0.0	0.5	Tin	3.14	mg/kg	3.00	613000.0	-	2.90
CH39-001	749182.80	2084176.51	0.0	0.5	Zinc	97.30	mg/kg	3.00	307000.0	-	73.76
CH39-002	749172.99	2084131.91	0.0	0.5	Arsenic	14.00	mg/kg	4.00	22.2	21.6	10.09
CH39-002	749172.99	2084131.91	0.0	0.5	Barium	849.00	mg/kg	117.00	26400.0	-	141.26
CH39-002	749172.99	2084131.91	0.0	0.5	Cadmium	3.18	mg/kg	2.00	962.0	-	1.61
CH39-002	749172.99	2084131.91	0.0	0.5	Copper	61.90	mg/kg	5.00	40900.0	-	18.06
CH39-002	749172.99	2084131.91	0.0	0.5	Iron	29100.00	mg/kg	820.00	307000.0	-	18037.00
CH39-002	749172.99	2084131.91	0.0	0.5	Manganese	475.00	mg/kg	11.00	3480.0	-	365.08
CH39-002	749172.99	2084131.91	0.0	0.5	Nickel	35.80	mg/kg	6.00	20400.0	-	14.91
CH39-002	749172.99	2084131.91	0.0	0.5	Strontium	303.00	mg/kg	12.00	613000.0	-	48.94
CH39-002	749172.99	2084131.91	0.0	0.5	Uranium, Total	13.98	mg/kg	6.36	2750.0	67.8	5.98
CH39-002	749172.99	2084131.91	0.0	0.5	Uranium-234	4.71	pCi/g	2.14	300.0	1800.0	2.25

## Draft Closeout Report for IHSS Group 800-1

Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CH39-002	749172.99	2084131.91	0.0	0.5	Uranium-235	0.27	pCi/g	0.16	8.0	1900.0	0.09
CH39-002	749172.99	2084131.91	0.0	0.5	Uranium-238	4.71	pCi/g	2.14	351.0	1600.0	2.00
CH39-002	749172.99	2084131.91	0.0	0.5	Zinc	215.00	mg/kg	3.00	307000.0	-	73.76
CH39-002	749172.99	2084131.91	2.5	4.5	Uranium-235	0.24	pCi/g	0.15	8.0	1900.0	0.12
CH39-003	749171.21	2084221.02	0.0	0.5	Antimony	6.50	mg/kg	3.00	409.0	-	0.47
CH39-003	749171.21	2084221.02	0.0	0.5	Arsenic	10.20	mg/kg	4.00	22.2	21.6	10.09
CH39-003	749171.21	2084221.02	0.0	0.5	Barium	794.00	mg/kg	117.00	26400.0	-	141.26
CH39-003	749171.21	2084221.02	0.0	0.5	Copper	66.00	mg/kg	5.00	40900.0	-	18.06
CH39-003	749171.21	2084221.02	0.0	0.5	Iron	30900.00	mg/kg	820.00	307000.0	-	18037.00
CH39-003	749171.21	2084221.02	0.0	0.5	Manganese	439.00	mg/kg	11.00	3480.0	-	365.08
CH39-003	749171.21	2084221.02	0.0	0.5	Nickel	34.80	mg/kg	6.00	20400.0	-	14.91
CH39-003	749171.21	2084221.02	0.0	0.5	Strontium	275.00	mg/kg	12.00	613000.0	-	48.94
CH39-003	749171.21	2084221.02	0.0	0.5	Tin	4.73	mg/kg	3.00	613000.0	-	2.90
CH39-003	749171.21	2084221.02	0.0	0.5	Uranium, Total	12.69	mg/kg	6.58	2750.0	67.8	5.98
CH39-003	749171.21	2084221.02	0.0	0.5	Uranium-234	4.27	pCi/g	2.21	300.0	1800.0	2.25
CH39-003	749171.21	2084221.02	0.0	0.5	Uranium-235	0.23	pCi/g	0.13	8.0	1900.0	0.09
CH39-003	749171.21	2084221.02	0.0	0.5	Uranium-238	4.27	pCi/g	2.21	351.0	1600.0	2.00
CH39-003	749171.21	2084221.02	0.0	0.5	Zinc	127.00	mg/kg	3.00	307000.0	-	73.76
CH39-003	749171.21	2084221.02	4.5	4.8	Uranium, Total	14.47	mg/kg	7.13	2750.0	67.8	3.04
CH39-003	749171.21	2084221.02	4.5	4.8	Uranium-234	4.87	pCi/g	2.40	300.0	1800.0	2.64
CH39-003	749171.21	2084221.02	4.5	4.8	Uranium-235	0.27	pCi/g	0.17	8.0	1900.0	0.12
CH39-003	749171.21	2084221.02	4.5	4.8	Uranium-238	4.87	pCi/g	2.40	351.0	1600.0	1.49
CH39-004	749188.00	2084140.02	0.0	0.5	Arsenic	13.30	mg/kg	4.00	22.2	21.6	10.09
CH39-004	749188.00	2084140.02	0.0	0.5	Barium	729.00	mg/kg	117.00	26400.0	-	141.26
CH39-004	749188.00	2084140.02	0.0	0.5	Copper	75.70	mg/kg	5.00	40900.0	-	18.06
CH39-004	749188.00	2084140.02	0.0	0.5	Iron	26800.00	mg/kg	820.00	307000.0	-	18037.00
CH39-004	749188.00	2084140.02	0.0	0.5	Lead	43.40	mg/kg	9.00	1000.0	25.6	54.62
CH39-004	749188.00	2084140.02	0.0	0.5	Manganese	440.00	mg/kg	11.00	3480.0	-	365.08
CH39-004	749188.00	2084140.02	0.0	0.5	Nickel	33.90	mg/kg	6.00	20400.0	-	14.91

Location Code	Northing	Easting	SBD (ft)	SED (ft)	Analyte	Result	Unit	Reporting Limit	WRW AL	Ecological AL	Background
CH39-004	749188.00	2084140.02	0.0	0.5	Strontium	367.00	mg/kg	12.00	613000.0	-	48.94
CH39-004	749188.00	2084140.02	0.0	0.5	Tin	3.95	mg/kg	3.00	613000.0	-	2.90
CH39-004	749188.00	2084140.02	0.0	0.5	Zinc	140.00	mg/kg	3.00	307000.0	-	73.76

SBD – Soil Begin Depth

SED – Soil End Depth

## 2.7 Sums of Ratios

RFCA sums of ratios (SORs) were calculated for the IHSS Group 800-1 sampling locations based on the accelerated action analytical data for the contaminants of concern (COCs) and the WRW ALs. Surface and subsurface soil SORs were calculated for the radionuclides of concern (americium-241, plutonium-239/240, and uranium-233/234, -235, and -238), and surface soil SORs were calculated for the non-radionuclides of concern (metals, volatile organic compounds [VOCs] and semi-volatile organic compounds [SVOCs] excluding arsenic, aluminum, iron, manganese, and polynuclear aromatic hydrocarbons). Subsurface soil concentrations are evaluated as part of the SSRS in Section 6.0.

SORs for radionuclides were calculated for all locations with analytical results greater than background means plus two standard deviations. Plutonium-239/240 activities are derived from the americium-241 activities. SORs for radionuclides are presented in Table 4. As shown, all SORs for radionuclides in surface and subsurface soil are less than 1. SORs for non-radionuclides were calculated for all locations where analyte concentrations were 10 percent or more of a contaminant's WRW AL. SORs for non-radionuclides are presented in Table 5. As shown, all SORs for non-radionuclides in surface soil are less than 1.

**Table 4**  
**RFCA Sums of Ratios Based on Radionuclide Concentrations**

Location Code	Starting Depth	Ending Depth	Surface Soil SOR	Subsurface Soil SOR
CF38-009	4.5	6.5	NA	0.025
CG38-000	0.0	0.5	0.040	NA
CG38-001	0.0	0.5	0.039	NA
CG38-002	0.0	0.5	0.019	NA
CG38-003	0.0	0.5	0.024	NA
CG38-005	0.0	0.5	0.022	NA
CG38-006	0.0	0.5	0.052	NA
CG38-006	2.5	4.5	NA	0.065
CG38-007	2.5	4.5	NA	0.031
CG38-008	0.0	0.5	0.021	NA
CG38-009	0.0	0.5	0.035	NA
CG38-010	0.0	0.5	0.025	NA
CG38-011	0.0	0.5	0.022	NA
CG38-012	0.0	0.5	0.047	NA
CG38-014	4.5	6.5	NA	0.062
CG38-015	4.5	6.5	NA	0.055
CG38-016	0.0	0.5	0.019	NA
CG38-016	2.5	4.5	NA	0.023
CG38-017	0.0	0.5	0.001	NA
CG38-018	0.5	2.5	NA	0.049
CG38-019	0.0	0.5	0.060	NA
CG38-019	0.5	2.5	NA	0.006
CG38-020	0.0	0.5	0.027	NA

Location Code	Starting Depth	Ending Depth	Surface Soil SOR	Subsurface Soil SOR
CG38-020	0.5	2.5	NA	0.026
CG38-021	0.0	0.5	0.018	NA
CG38-021	0.5	2.5	NA	0.056
CG38-022	0.3	0.8	NA	0.004
CG38-023	0.0	0.5	0.052	NA
CG38-024	0.3	0.8	NA	0.005
CG38-025	0.3	0.8	NA	0.005
CG38-027	0.0	0.5	0.033	NA
CG38-027	0.5	2.5	NA	0.035
CG38-028	0.0	0.5	0.051	NA
CG38-028	0.5	2.5	NA	0.064
CG38-028	2.0	2.5	NA	0.038
CG38-029	0.0	0.5	0.065	NA
CG38-029	0.5	2.5	NA	0.001
CG39-000	0.0	0.5	0.024	NA
CG39-001	0.5	2.5	NA	0.052
CG39-001	0.0	0.5	0.060	NA
CG39-002	0.0	0.5	0.060	NA
CG39-003	0.3	0.8	NA	0.045
CH38-001	0.0	0.5	0.016	NA
CH38-002	0.0	0.5	0.016	NA
CH38-003	0.0	0.5	0.022	NA
CH38-003	16.5	18.5	NA	0.038
CH38-003	18.5	20.5	NA	0.055
CH38-004	0.0	0.5	0.055	NA
CH38-005	0.0	0.5	0.042	NA
CH38-006	0.0	0.5	0.045	NA
CH38-006	18.5	20.5	NA	0.042
CH38-007	0.0	0.5	0.082	NA
CH38-008	0.0	0.5	0.076	NA
CH38-010	0.0	0.5	0.001	NA
CH38-011	0.0	0.5	0.050	NA
CH38-012	0.0	0.5	0.018	NA
CH38-013	0.0	0.5	0.031	NA
CH38-013	2.5	2.8	NA	0.049
CH38-014	0.0	0.5	0.066	NA
CH38-015	0.0	0.5	0.063	NA
CH38-016	2.5	4.5	NA	0.064
CH38-018	2.5	2.8	NA	0.028
CH38-020	0.0	0.5	0.043	NA
CH38-021	0.0	0.5	0.052	NA
CH38-021	2.5	4.5	NA	0.004
CH38-022	0.0	0.5	0.051	NA
CH38-023	0.0	0.5	0.001	NA
CH38-023	4.5	4.8	NA	0.025
CH38-024	0.0	0.5	0.022	NA

Location Code	Starting Depth	Ending Depth	Surface Soil SOR	Subsurface Soil SOR
CH38-024	4.5	6.5	NA	0.019
CH38-025	0.0	0.5	0.017	NA
CH38-025	2.5	4.5	NA	0.022
CH38-026	0.0	0.5	0.006	NA
CH38-026	2.5	4.5	NA	0.071
CH38-028	6.5	8.5	NA	0.055
CH38-028	8.5	10.5	NA	0.058
CH38-029	6.5	8.5	NA	0.023
CH38-031	2.5	4.5	NA	0.058
CH38-031	4.5	6.5	NA	0.047
CH38-032	16.5	18.5	NA	0.028
CH38-032	18.5	20.5	NA	0.045
CH38-033	0.0	0.5	0.059	NA
CH38-033	16.5	18.5	NA	0.070
CH38-033	18.5	20.5	NA	0.033
CH39-002	0.0	0.5	0.063	NA
CH39-002	2.5	4.5	NA	0.030
CH39-003	0.0	0.5	0.056	NA
CH39-003	4.5	4.8	NA	0.064

NA – Not applicable. Radionuclides may be present but at concentrations below background means plus two standard deviations.

**Table 5**  
**Non-Radionuclide Surface Soil Sums of Ratios**

Location Code	Surface Soil SOR
CG38-010	0.250
CG38-021	0.119
CG38-028	0.104
CH38-007	0.134
CH38-015	0.108

### 3.0 ACCELERATED ACTION

Remedial action objectives (RAOs) were developed and described in ER RSOP Notification #03-12 (DOE 2003b). ER RSOP RAOs include the following:

1. Provide a remedy consistent with the RFETS goal of protection of human health and the environment;
2. Provide a remedy that minimizes the need for long-term maintenance and institutional or engineering controls; and
3. Minimize the spread of contaminants during implementation of accelerated actions.

The accelerated action remediation goals for IHSS Group 800-1 are listed below.

- Remove rock fill within sumps and dispose at an appropriate facility based on waste characterization results.

- Remove 100 percent of the Building 865 slab, and the below-grade pits and sumps under the slab. Remove any remaining slabs associated with the support buildings (e.g., Buildings 863, 867 and 868) within 3 feet of the final grade. Also remove the old and new transformer pads located on the western side of the Building 865 slab.
- Dispose of the Building 865 slab and associated pits and sumps as low-level radioactive and beryllium waste. Other concrete will be recycled in accordance with the RSOP for Recycling Concrete (DOE 2003c) or disposed at an appropriate facility based on waste characterization results.
- Remove OPWL under the Building 865 slab and two sections of NPWL west of the Building 865 slab within 3 feet of the final grade in accordance with the RSOP for Facility Disposition (DOE 2000b) and RFCA Attachment 14 (DOE et al 2003). Soil with contaminant concentrations greater than RFCA soil WRW ALs for plutonium-239/240 and americium-241 resulting from any leaks from OPWL within 3 feet of the ground surface will be removed to a depth of 3 feet in accordance with RFCA Attachment 14 (DOE et al 2003).
- Remove the foundation drains from under the UBC and PACs, the storm drains located just west of PAC 800-1204, and the sanitary sewer lines located northeast of UBC 865 to 3 feet of final grade. Remaining foundation and storm drains will be disrupted to prevent their operation and the associated collection and movement of groundwater from this site.
- Remove soil with non-radionuclide or uranium contaminant concentrations greater than the RFCA WRW ALs to a depth of 6 inches. If soil contamination greater than the ALs extends below 6 inches in depth, perform a SSRS to evaluate the need for soil removal.
- Remove soil with plutonium-239/240 or americium-241 activities greater than the RFCA WRW ALs to a depth of 3 feet, or to less than the applicable AL, whichever comes first. If activities are greater than 3 nanocuries per gram (nCi/g) between 3 and 6 feet, characterize and remediate in accordance with RFCA Attachment 5 (DOE et al 2003). If plutonium-239/240 or americium-241 is present at an activity greater than the RFCA WRW AL but less than 3 nCi/g below 3 feet, conduct a SSRS.
- Consult with the regulatory agencies if contaminant concentrations are greater than the ecological ALs but lower than the WRW ALs.
- If contaminated soil is removed, collect confirmation soil samples in accordance with the IASAP (DOE 2001a).

Accelerated action activities were conducted between August 14, 2003, and December 18, 2003. Start and end dates of significant activities are listed in Table 6. Key components removed during the accelerated action are shown on Figure 5. Photographs of site activities are provided in Appendix A.

**Table 6**  
**Dates of Accelerated Action Activities**

<b>Activity</b>	<b>Start Date</b>	<b>End Date</b>	<b>Duration</b>
Characterization Sampling	August 14, 2003	December 12, 2003	4 Months
Removal Activities	October 7, 2003	December 18, 2003	48 Days
Backfill Excavations	October 28, 2003	December 18, 2003	35 Days

### **3.1 Removal Activities**

All accelerated action objectives were achieved. Removal activities are described below.

#### **3.1.1 Building Slabs, Pits, Sump, and Underground Utilities**

The Building 865 slab (100 percent) was removed, as well as most of the footer walls and the top of the concrete caissons. The bottom of the footer wall on the western side of the High Bay remains (Figure 5), the top of which is located at least 5 feet below final grade. The remaining portions of the caissons are at least 3.5 feet below final grade. All of the slab pits were emptied of debris (e.g., rock fill), broken up, and removed. Pits removed include the Drop Hammer Pit, Extrusion Pit, Electronic Beam Welder Pit, and Erie Ram Pit. A thick (greater than 4 ft), reinforced concrete, pedestal, which was used to support a rolling mill and the Hot Isostatic Press in the High Bay, was broken up and removed down to at least 3 feet below final grade. The sump located near the southwestern corner of the High Bay was also removed. In addition, the Building 865 dock, the transformer slabs and associated sump, the telecommunication vault to the west of the High Bay, and supports for steam lines were removed, as well as electrical conduit and cabling (including the Power Instrumentation Alarm line), and gas, steam/condensate and water lines encountered under the slabs within 3.5 feet from the ground surface. An excavator was used to break up and remove most of the items. Saws were used to cut up some of the radioactively contaminated sections of the High Bay slab.

Items remaining below grade were free-released in accordance with DOE Order 5400.5 (Radiation Protection to the Public and Environment). The upper sections of the footer walls, caissons, and the equipment pedestal that were removed were surveyed for radiological contamination and released as sanitary waste, indicating that the remaining sections were not contaminated. Some of the remaining sections, including the top of the remaining equipment pedestal and the top of remaining caissons in the vicinity of the OPWL, were also surveyed and met the free-release criteria. In addition, the soil in the vicinity of the remaining items was not contaminated (refer to Section 2.6), and no evidence of spills, leaks or ruptures was found in their vicinity.

Uncontaminated sections of the slab, primarily from the Low Bay and the loading dock east of the High Bay, were surveyed and disposed of at an off-site sanitary landfill. Contaminated sections from the High Bay were disposed of as low-level radioactive, beryllium waste. Painted sections were classified as polychlorinated biphenyl (PCB) Bulk Product Waste. In addition, a concrete-filled drum was found and removed from the base of the Drop Hammer Pit. No radiation or organic vapors were detected. However, because the entire content could not be evaluated, the drum was disposed of as low-level radioactive waste.



### **3.1.2 Process Waste Lines and Other Drains**

All process waste lines under the Building 865 slab, including OPWL and drains leading to the OPWL, were tapped, drained and removed. These lines had been previously filled with epoxy. The removed segments were cut up and placed in low-level radioactive waste (intermodal) containers. The end of the remaining line segment west of the building slab (where the Building 865 lines were cut off from the rest of the OPWL system) was filled with grout (approximately 2 feet into the line). The coordinates for that point are as follows:

Northing: 749106  
Easting: 2084060.

Two NPWL sections located west of Building 865 were also tapped and drained, filled with epoxy, and removed. These sections were packaged and sent off site for disposal as low-level mixed waste. The northernmost line was removed up to Valve Vault #6, and all of the line to the Building 889 area was removed (there was no remaining end to grout).

Because the building foundation drains are relatively deep, they were not removed, with one exception. A 50-foot section south of the Drop Hammer Pit was removed. Because this section was made of Transite, it was disposed of at an off-site sanitary landfill as asbestos waste. The ends of the sections remaining in the ground where the drain line was cut were grouted. Other sections of the foundation drains were disrupted and grouted (near the northwestern, southwestern and northeastern corners of the building, which were 9, 14 and 4 feet below planned final grade, respectively).

Cooling tower pipelines beneath the western side of the High Bay were removed to at least 3.5 feet below ground surface. Other water lines (e.g., fire, domestic and steam/condensate lines) encountered within 3.5 feet of grade also were removed. These lines were disposed of at an off-site sanitary landfill.

No known sewer lines were found under or adjacent to the Building 865 slab within 5 feet of the ground surface, and therefore, no known sewer lines were removed. However, some lines that existed under the slab and were removed as OPWL may have been sewer lines. A sewer line is reportedly located in the northeastern part of the project area, but it is approximately 6 feet below grade (DOE 2004) and was not encountered. No storm drains were found under or adjacent to the Building 865 slab within 3.5 feet of final grade, and therefore, no storm drains were removed.

### **3.1.3 Soil Remediation and Site Reclamation**

Soil within the IHSS Group was sampled, and based on the analytical results (Section 2.6) and the results of the SSRS (Section 6.0), soil removal was not required. All excavations associated with the removal of footer walls, caissons, pits and the sump, and process lines were then backfilled, and the area was rough-graded (Section 11.0). Documentation regarding approval to backfill is provided in four ER Regulatory Contact Records, which are provided in Appendix B. Approximately 1,500 cubic yards of clean fill was brought to the project site. Final grading and revegetation will occur after the IHSS Group 800-3 accelerated action project is completed.

#### **4.0 CONFIRMATION SAMPLING**

Based on characterization results (Section 2.6) and the SSRS (Section 6.0), soil removal is not necessary. Therefore, no confirmation samples were collected.

#### **5.0 RCRA UNIT CLOSURE**

RCRA-regulated items, including the sump (145A) in the Building 865 slab and process waste lines in Building 865 and in between Buildings 865 and 866, were closed in accordance with RCRA regulations and the RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities (DOE 2003d). These RCRA closure activities are documented the Final Project Closeout Report for Building 865 Cluster, Appendix 4, Closure Summary Report for Interim Status RCRA Units 40.17, 40.18 and 40.19 in Buildings 865 and 866 (DOE 2004).

NPWL segments also were removed as part of this accelerated action, as described in Section 3.0 and shown on Figure 5. These activities will be further documented in RCRA closure report at a later date.

#### **6.0 SUBSURFACE SOIL RISK SCREEN**

The SSRS follows the steps identified on Figure 3 in Attachment 5 of the RFCA Modification (DOE et al 2003).

**Screen 1** – Are the contaminants of concern concentrations below RFCA Table 3 soil ALs for the WRW?

As shown in Table 3, all COC concentrations are less than the WRW ALs, except for one subsurface arsenic concentration. The arsenic concentration was 25.5 mg/kg between 18.5 and 20.5 feet below ground surface, and the WRW AL is 22.2 mg/kg.

**Screen 2** – Is there a potential for subsurface soil to become surface soil (landslides and erosion areas identified on Figure 1 of the RFCA Modification)?

No. IHSS Group 800-1 is not located in an area susceptible to landslides or high erosion (Figure 1) (DOE et al 2003).

**Screen 3** – Does subsurface soil contamination for radionuclides exceed criteria defined in RFCA Section 5.3 and Attachment 14?

No. As shown in Table 3, radionuclide concentrations are below the soil ALs.

**Screen 4** - Is there an environmental pathway and sufficient quantity of COCs that would cause an exceedance of surface water standards?

Contaminant migration via surface runoff and groundwater are two possible pathways whereby surface water could become contaminated from IHSS Group 800-1 COCs. Run-off from IHSS Group 800-1 flows into the Central Avenue Ditch and through Gauging Station (GS)-10, which is the nearest RFCA Surface Water Point of Evaluation (DOE 2003e). Plutonium-239/240 and americium-241 activities have exceeded surface water ALs at GS-10; however, GS-10 receives water from a large part of the IA, and surface

water quality at GS-10 cannot be attributable to any single IHSS Group. In addition, plutonium-239/240 and americium-241 activities are not elevated at IHSS Group 800-1. Furthermore, the soil with the high arsenic concentration, at 18.5 to 20.5 feet below the Building 865 slab area, will not be subject to erosion.

Groundwater around IHSS Group 800-1 is monitored at the following D&D groundwater monitoring wells: 86501, 86601 and 86701. Wells 40999 and P317989 are used to monitor both IHSS Groups 800-1 and 800-4. Monitoring results (DOE 2002b) are summarized below by well.

- Well 86501 contained uranium-233/234, uranium-235 and uranium-238 concentrations that were greater than both RFCA Tier II groundwater ALs and background means plus two standard deviations.
- Well 86601 contained uranium-233/234 and uranium-238 concentrations that were greater than RFCA Tier II groundwater ALs but below background means plus two standard deviations.
- Well 86701 contained trichloroethene, uranium-233/234, uranium-235 and uranium-238 concentrations that were greater than RFCA Tier II groundwater ALs. Some uranium isotope concentrations were greater than background means plus two standard deviations.
- Well 40999 contained uranium-233/234 and uranium-238 concentrations that were greater than RFCA Tier II groundwater ALs but less than background means plus two standard deviations.
- Well P317989 contained uranium-233/234, uranium-235 and uranium-238 concentrations that were greater than both RFCA Tier II groundwater ALs and background means plus two standard deviations.

High uranium levels in this area were investigated by using inductively coupled plasma and mass spectroscopy methods to provide isotopic ratios from which a decision can be made whether the uranium is natural background or a contaminant (DOE 2000c, 2001c, 2002c). Wells upgradient were evaluated and found to have ratios in the natural range. Downgradient alluvial wells have not been evaluated. The groundwater contamination in the area and any necessary remediation (e.g., groundwater treatment system) will be further evaluated in a future decision document.

**Screen 5** – Are COC concentrations below RFCA Table 3 soil ALs for ecological receptors?

The one elevated arsenic concentration (25.5 mg/kg) exceeded the ecological receptor AL, which is 21.6 mg/kg. However, the elevated concentration occurred at a depth of 18.5 to 20.5 feet below ground surface. In addition, seven surface soil lead concentrations and six subsurface soil lead concentrations exceeded the ecological receptor AL. These lead exceedances ranged from 25.9 to 250 mg/kg, and the ecological receptor AL is 25.6 mg/kg. The elevated arsenic and lead concentrations will be further evaluated in the AAESE and the ecological portion of the Sitewide CRA.

## **7.0 STEWARDSHIP ANALYSIS**

This stewardship evaluation, applicable to the entire IHSS Group 800-1, is documented in the following sections. The regulatory agencies were informed of project activities and characterization results through frequent project updates, e-mails, telephone contacts, and personal contact throughout the project duration. The stewardship evaluation was conducted through ongoing consultation with the regulatory agencies. Copies of these documents are provided in Appendix B.

### **7.1 Current Site Conditions**

As discussed in Section 3.1, accelerated actions at IHSS Group 800-1 consisted of excavation of building slabs, foundation walls, equipment pits, one sump, process waste lines, and other utilities. Based on the accelerated action, current conditions at IHSS Group 800-1 are listed below.

- Potential sources of contamination that existed in IHSS Group 800-1 (slabs, pits and a sump, and process waste lines) were removed.
- Some building components, including portions of footer walls and caissons, and some sanitary, fire water, and domestic water lines, remain at least 3.5 feet below planned final grade.
- Surface and subsurface contaminant concentrations in soil are greater than background means plus two standard deviations or RLs throughout the IHSS Group.
- Contaminant concentrations are less than RFCA WRW ALs with one exception. The arsenic concentration at Sampling Location CH38-003 was 25.5 mg/kg between 18.5 and 20.5 feet below ground surface, and the WRW AL is 22.2 mg/kg. The elevated arsenic concentration also exceeded the ecological receptor AL, which is 21.6 mg/kg.
- Seven surface soil lead concentrations and six subsurface soil lead concentrations exceeded the ecological receptor AL. These lead exceedances ranged from 25.9 to 250 mg/kg, and the ecological receptor AL is 25.6 mg/kg.

### **7.2 Near-Term Management Recommendations**

Because residual contaminant concentrations are low and potential contaminant sources were removed, mitigated, or found not to have existed, no specific near-term management techniques are required. Potential contaminant sources and pathways have been removed. Contaminant concentrations in soil remaining at IHSS Group 800-1 do not trigger any further accelerated action. Near-term recommendations include the following:

- Excavation at the site will continue to be controlled through the Site Soil Disturbance Permit process;
- Access will be restricted to minimize disturbance to newly revegetated areas; and
- Site access and security controls and the Soil Disturbance Permit process will remain in place pending implementation of long-term controls.

### **7.3 Long-Term Stewardship Recommendations**

Based on remaining environmental conditions at IHSS Group 800-1, no specific long-term stewardship activities are recommended beyond the generally applicable Site requirements. These requirements may be imposed on this area in the future. Institutional controls that will be used as appropriate for this area include the following:

- Prohibitions on construction of buildings in the IA;
- Restrictions on excavation or other soil disturbance; and
- Prohibitions on groundwater pumping in the area of IHSS Group 800-1.

No specific engineered controls or environmental monitoring are recommended as a result of the conditions remaining at IHSS Group 800-1. Likewise, no specific institutional or physical controls, such as fences, are recommended as a result of the conditions remaining at IHSS Group 800-1.

This Closeout Report and associated documentation will be retained as part of the Rocky Flats Administrative Record (AR) file. The specific long-term stewardship recommendations will also be summarized in the Rocky Flats Long-Term Stewardship Strategy.

IHSS Group 800-1 will be evaluated as part of the Sitewide CRA, which is part of the RCRA Facility Investigation/Remedial Investigation and Corrective Measures Study/Feasibility Study (RI/FS) that will be conducted for the Site. The need for and extent of any more general, long-term stewardship activities will also be evaluated in the RI/FS and will be proposed as part of the preferred alternative in the Proposed Plan for the Site. Institutional controls and other long-term stewardship requirements for Rocky Flats will be contained in the Corrective Action Decision/Record of Decision, any post-closure Colorado Hazardous Waste Act permit that may be required, and any post-RFCA agreement.

### **8.0 DEVIATIONS FROM THE ER RSOP**

Removal methods and objectives did not deviate from the ER RSOP and Notification #03-12. Storm drains close to UBC 865 were not located; therefore, no storm drains were removed.

### **9.0 POST-REMEDIATION CONDITIONS**

The Building 865 slab, foundation walls, equipment pits, sump, process and sanitary waste lines, and other utilities were removed. Sampling results from the soil beneath the items removed indicate that all contaminant concentrations are less than the RFCA WRW ALs, except for one subsurface arsenic concentration. The arsenic concentration at Sampling Location CH38-008 was 25.5 mg/kg between 18.5 and 20.5 feet below ground surface, and the WRW AL is 22.2 mg/kg. The one elevated arsenic concentration also exceeded the ecological receptor AL, which is 21.6 mg/kg. In addition, seven surface soil lead concentrations and six subsurface soil lead concentrations exceeded the ecological receptor AL. These lead exceedances ranged from 25.9 to 250 mg/kg, and the

ecological receptor AL is 25.6 mg/kg. Residual surface and subsurface soil concentrations greater than background means plus two standard deviations or RLs are shown on Figures 3 and 4.

The presence of residual contamination was determined based on accelerated action characterization. Pre-accelerated action characterization data (Figure 2) were limited, and the PCB sampling locations around the Building 865 transformer pad are NLR due to the soil disturbance that occurred when the pad was removed (Section 12.0).

SORs, based on the RFCA WRW ALs for COCs and accelerated action data, are listed in Tables 4 and 5 (Section 2.7). All SORs for radionuclides in surface and subsurface soil were less than 1, and all SORs for non-radionuclides in surface soil were less than 1.

## **10.0 WASTE MANAGEMENT**

Waste from the IHSS Group 800-1 accelerated action consisted of concrete, waste and water lines, and electric conduit and cabling. Some of the concrete and all under-building drain lines, including OPWL, were classified as low-level radioactive waste and placed in intermodal containers. A total of 150 intermodals of low-level radioactive waste (2,548 cubic yards) were shipped off site for disposal. The low-level radioactive concrete waste was also classified as beryllium waste. Approximately 70 cubic feet of mixed waste (NPWL sections) were shipped off site for disposal in one IP-1 metal container. Most of the concrete was classified as sanitary waste, placed in dump trucks, and shipped to an off-site sanitary landfill. Approximately 1,667 cubic yards of sanitary waste were shipped off site. Painted concrete waste was also classified as PCB Bulk Product waste. Approximately 50 feet of foundation drain, made of Transite, was also classified as asbestos waste and disposed at an off-site sanitary landfill.

The saw cutting of the High Bay slab generated some wastewater. This water was collected in a polyvinyl tank and analyzed. Based on analytical results, the water was taken to the Building 891 treatment facility. The water removed from the excavation during the removal of process waste lines was also collected in a polyvinyl tank, analyzed, and taken to Building 891. Groundwater that collected in the manhole east of the Low Bay was analyzed, and based on analytical results, pumped out and discharged to a nearby ditch.

## **11.0 SITE RECLAMATION**

Approximately 1,500 cubic yards of clean fill was brought to the project site from the 280 Pile, which is located at the northwestern corner of the Site near the unused landfill, and used to backfill excavations and smooth out the surface to prevent any large-scale ponding of precipitation. Final grading and revegetation will occur after the IHSS Group 800-3 accelerated action project is completed (by the end of 1<sup>st</sup> quarter of FY 05).

## **12.0 NO LONGER REPRESENTATIVE SAMPLING LOCATIONS**

The historical PCB sampling locations shown on Figure 2 and listed in Table 7 were disturbed when the Building 865 transformer slabs were removed and are NLR. There are no accelerated action sampling locations that are NLR. Accelerated action sampling

was conducted after slabs, pits, waste lines, and other facility components were removed, and therefore, removal activities did not disturb these sampling locations. Some of the subsurface locations were buried by backfill, but the locations were not disturbed.

**Table 7**  
**No Longer Representative Sampling Locations**

<b>Sampling Location</b>	<b>Northing</b>	<b>Easting</b>
PCB-16-1	749162.590	2084059.940
PCB-16-2	749171.020	2084063.390
PCB-16-3	749164.510	2084068.370
PCB-16-4	749170.640	2084071.820

### **13.0 DATA QUALITY ASSESSMENT**

The DQOs for this project are described in the IASAP (DOE 2001a). All DQOs for this project were achieved based on the following:

- Regulatory agency-approved sampling program design (IASAP Addendum #IA-03-01 [DOE 2002a]), modified due to field conditions, in accordance with the IASAP (DOE 2001a);
- Collection of samples in accordance with the sampling design; and
- Results of the DQA, as described in the following sections.

#### **13.1 Data Quality Assessment Process**

The DQA process ensures that the type, quantity, and quality of environmental data used in decision making are defensible, and is based on the following guidance and requirements:

- U.S. Environmental Protection Agency (EPA) QA/G-4, 1994a, Guidance for the Data Quality Objective Process;
- EPA QA/G-9, 1998, Guidance for the Data Quality Assessment Process, Practical Methods for Data Analysis; and
- U.S. Department of Energy (DOE) Order 414.1A, 1999, Quality Assurance.

Verification and validation (V&V) of data are the primary components of the DQA. The final data are compared with original project DQOs and evaluated with respect to project decisions; uncertainty within the decisions; and quality criteria required for the data, specifically precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS). Validation criteria are consistent with the following RFETS-specific documents and industry guidelines:

- EPA 540/R-94/012, 1994b, USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review;

- EPA 540/R-94/013, 1994c, USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review;
- Kaiser-Hill Company, L.L.C. (K-H), 2002, General Guidelines for Data Verification and Validation, DA-GR01-v2, October;
- K-H, 2002, V&V Guidelines for Isotopic Determinations by Alpha Spectrometry, DA-RC01-v2, October;
- K-H, 2002, V&V Guidelines for Volatile Organics, DA-SS01-v3, October;
- K-H, 2002, V&V Guidelines for Semivolatile Organics, DA-SS02-v3, October;
- K-H, 2002, V&V Guidelines for Metals, DA-SS05-v3, October; and
- Lockheed-Martin, 1997, Evaluation of Radiochemical Data Usability, ES/ER/MS-5.

This report will be submitted to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) AR for permanent storage 30 days after being provided to CDPHE and/or EPA.

### **13.2 Verification and Validation of Results**

Verification ensures that data produced and used by the project are documented and traceable in accordance with quality requirements. Validation consists of a technical review of all data that directly support the project decisions so that any limitations of the data relative to project goals are delineated and the associated data are qualified accordingly. The V&V process defines the criteria that constitute data quality, namely PARCCS parameters. Data traceability and archival are also addressed. V&V criteria include the following:

- Chain-of-custody;
- Preservation and hold times;
- Instrument calibrations;
- Preparation blanks;
- Interference check samples (metals);
- Matrix spikes/matrix spike duplicates (MS/MSDs);
- Laboratory control samples (LCSs);
- Field duplicate measurements;
- Chemical yield (radiochemistry);
- Required quantitation limits/minimum detectable activities (sensitivity of chemical and radiochemical measurements, respectively); and
- Sample analysis and preparation methods.

Evaluation of V&V criteria ensures that PARCCS parameters are satisfactory (i.e., within tolerances acceptable to the project). Satisfactory V&V of laboratory quality controls are captured through application of validation “flags” or qualifiers to individual records.



Raw hard-copy data (for example, individual analytical data packages) are currently filed by report identification number and maintained by K-H Analytical Services Division; older hard copies may reside in the Federal Center in Lakewood, Colorado. Electronic data are stored in SWD.

Both real and QC data are included on the enclosed compact disc.

### 13.2.1 Accuracy

The following measures of accuracy were considered:

- LCS evaluation;
- Surrogate evaluation;
- Field blank evaluation; and
- Sample MS evaluation.

Results are compared to method requirements and project goals. The results of these comparisons are summarized for RFCA COCs where the result could impact project decisions. Particular attention is paid to those values near ALs when QC results could indicate unacceptable levels of uncertainty for decision-making purposes.

#### **Laboratory Control Sample Evaluation**

The frequency of LCS measurements, relative to each laboratory batch, is given in Table 8. LCS frequency was adequate based on at least one LCS per batch. The minimum and maximum LCS results are also tabulated, by chemical, for the entire project. While not all LCS results are within tolerances, project decisions based on AL exceedances were not affected. LCS results that were outside of tolerances were reviewed to determine whether a potential bias might be indicated. LCS recoveries are not indicative of matrix effects because they are not prepared using site samples. LCS results do indicate whether the laboratory may be introducing a bias in the results. Recoveries reported above the upper limit may indicate the actual sample results are less than reported. Because this is environmentally conservative, no further action is needed. The analytes with unacceptable low recoveries were evaluated. If the highest sample result less than the AL, divided by the lowest LCS recovery for that analyte, is less than the AL, no further action is taken because any indicated bias is not great enough to make a falsely low sample result be above the AL. As a result of these analyses, the LCS recoveries for this project did not impact project decisions. Any qualifications of individual results due to LCS performance exceeding upper or lower tolerance limits are captured in the V&V flags, described in Section 13.2.3.

Table 8  
LCS Evaluation Summary

Test Method	CAS	Analyte	Min Result	Max Result	Result Unit	No. of Analytes	No. of Batches
SW-846 8260	71-55-6	1,1,1-Trichloroethane	88	123	%REC	33	31
SW-846 8260	79-34-5	1,1,2,2-Tetrachloroethane	84.16	116.3	%REC	33	31
SW-846 8260	79-00-5	1,1,2-Trichloroethane	74.48	118.1	%REC	33	31
SW-846 8260	75-34-3	1,1-Dichloroethane	86.91	127.3	%REC	33	31

Test Method	CAS	Analyte	Min Result	Max Result	Result Unit	No. of Analytes	No. of Batches
SW-846 8260	75-35-4	1,1-Dichloroethene	86.9	127.4	%REC	33	31
SW-846 8270	120-82-1	1,2,4-Trichlorobenzene	60	60	%REC	1	1
SW-846 8260	120-82-1	1,2,4-Trichlorobenzene	81.98	118.8	%REC	33	31
SW-846 8260	95-50-1	1,2-Dichlorobenzene	85.27	125.6	%REC	33	31
SW-846 8260	107-06-2	1,2-Dichloroethane	75.39	116.5	%REC	33	31
SW-846 8260	78-87-5	1,2-Dichloropropane	73.09	124.5	%REC	33	31
SW-846 8260	106-46-7	1,4-Dichlorobenzene	83	125.4	%REC	33	31
SW-846 8270	95-95-4	2,4,5-Trichlorophenol	63	63	%REC	1	1
SW-846 8270	88-06-2	2,4,6-Trichlorophenol	62	62	%REC	1	1
SW-846 8270	120-83-2	2,4-Dichlorophenol	62	62	%REC	1	1
SW-846 8270	105-67-9	2,4-Dimethylphenol	59	59	%REC	1	1
SW-846 8270	51-28-5	2,4-Dinitrophenol	55	55	%REC	1	1
SW-846 8270	121-14-2	2,4-Dinitrotoluene	65	65	%REC	1	1
SW-846 8270	606-20-2	2,6-Dinitrotoluene	63	63	%REC	1	1
SW-846 8260	78-93-3	2-Butanone	43.9	112	%REC	33	31
SW-846 8270	91-58-7	2-Chloronaphthalene	61	61	%REC	1	1
SW-846 8270	95-57-8	2-Chlorophenol	64	64	%REC	1	1
SW-846 8270	91-57-6	2-Methylnaphthalene	62	62	%REC	1	1
SW-846 8270	95-48-7	2-Methylphenol	64	64	%REC	1	1
SW-846 8270	88-74-4	2-Nitroaniline	66	66	%REC	1	1
SW-846 8270	91-94-1	3,3'-Dichlorobenzidine	45	45	%REC	1	1
SW-846 8270	534-52-1	4,6-Dinitro-2-methylphenol	50	50	%REC	1	1
SW-846 8270	106-47-8	4-Chloroaniline	33	33	%REC	1	1
SW-846 8260	108-10-1	4-Methyl-2-pentanone	73	110.9	%REC	33	31
SW-846 8270	106-44-5	4-Methylphenol	66	66	%REC	1	1
SW-846 8270	100-02-7	4-Nitrophenol	67	67	%REC	1	1
SW-846 8270	83-32-9	Acenaphthene	60	60	%REC	1	1
SW-846 8260	67-64-1	Acetone	34.65	101	%REC	33	31
SW-846 6010	7429-90-5	Aluminum	88	104	%REC	11	10
SW-846 8270	120-12-7	Anthracene	59	59	%REC	1	1
SW-846 6010	7440-36-0	Antimony	91	102	%REC	11	10
SW-846 8082	12674-11-2	Aroclor-1016	94	99	%REC	3	3
SW-846 8082	11096-82-5	Aroclor-1260	97	111	%REC	3	3
SW-846 6010	7440-38-2	Arsenic	91	103	%REC	11	10
SW-846 6010	7440-39-3	Barium	95	107	%REC	11	10
SW-846 8260	71-43-2	Benzene	93	126.4	%REC	33	31
SW-846 8270	56-55-3	Benzo(a)anthracene	58	58	%REC	1	1
SW-846 8270	50-32-8	Benzo(a)pyrene	59	59	%REC	1	1
SW-846 8270	205-99-2	Benzo(b)fluoranthene	58	58	%REC	1	1
SW-846 8270	207-08-9	Benzo(k)fluoranthene	59	59	%REC	1	1
SW-846 8270	65-85-0	Benzoic Acid	29	29	%REC	1	1
SW-846 8270	100-51-6	Benzyl Alcohol	70	70	%REC	1	1
SW-846 6010	7440-41-7	Beryllium	88	107	%REC	11	10
SW-846 8270	111-44-4	bis(2-Chloroethyl)ether	64	64	%REC	1	1

Test Method	CAS	Analyte	Min Result	Max Result	Result Unit	No. of Analytes	No. of Batches
SW-846 8270	39638-32-9	bis(2-Chloroisopropyl)ether	66	66	%REC	1	1
SW-846 8270	117-81-7	bis(2-Ethylhexyl)phthalate	62	62	%REC	1	1
SW-846 8260	75-27-4	Bromodichloromethane	80.85	124.3	%REC	33	31
SW-846 8260	75-25-2	Bromoform	79	120.8	%REC	33	31
SW-846 8260	74-83-9	Bromomethane	73.58	188.5	%REC	33	31
SW-846 8270	85-68-7	Butylbenzylphthalate	59	59	%REC	1	1
SW-846 6010	7440-43-9	Cadmium	91	102	%REC	11	10
SW-846 8260	75-15-0	Carbon Disulfide	93	176.1	%REC	33	31
SW-846 8260	56-23-5	Carbon Tetrachloride	92.23	126.4	%REC	33	31
SW-846 8260	108-90-7	Chlorobenzene	87.7	125.7	%REC	33	31
SW-846 8260	75-00-3	Chloroethane	83.21	195	%REC	33	31
SW-846 8260	67-66-3	Chloroform	92	123.2	%REC	33	31
SW-846 8260	74-87-3	Chloromethane	33.58	292.6	%REC	33	31
SW-846 6010	7440-47-3	Chromium	90	101	%REC	11	10
SW-846 8270	218-01-9	Chrysene	57	57	%REC	1	1
SW-846 8260	10061-01-5	cis-1,3-Dichloropropene	74.77	120.1	%REC	33	31
SW-846 6010	7440-48-4	Cobalt	90	101	%REC	11	10
SW-846 6010	7440-50-8	Copper	90	104	%REC	11	10
SW-846 8270	84-74-2	Di-n-butylphthalate	60	60	%REC	1	1
SW-846 8270	117-84-0	Di-n-octylphthalate	58	58	%REC	1	1
SW-846 8270	53-70-3	Dibenz(a,h)anthracene	56	56	%REC	1	1
SW-846 8270	132-64-9	Dibenzofuran	60	60	%REC	1	1
SW-846 8260	124-48-1	Dibromochloromethane	90	124.5	%REC	33	31
SW-846 8270	84-66-2	Diethylphthalate	63	63	%REC	1	1
SW-846 8270	131-11-3	Dimethylphthalate	61	61	%REC	1	1
SW-846 8260	100-41-4	Ethylbenzene	86.3	127.1	%REC	33	31
SW-846 8270	206-44-0	Fluoranthene	55	55	%REC	1	1
SW-846 8270	86-73-7	Fluorene	60	60	%REC	1	1
SW-846 8270	118-74-1	Hexachlorobenzene	62	62	%REC	1	1
SW-846 8260	87-68-3	Hexachlorobutadiene	64.09	116.1	%REC	33	31
SW-846 8270	87-68-3	Hexachlorobutadiene	59	59	%REC	1	1
SW-846 8270	77-47-4	Hexachlorocyclopentadiene	56	56	%REC	1	1
SW-846 8270	67-72-1	Hexachloroethane	63	63	%REC	1	1
SW-846 8270	193-39-5	Indeno(1,2,3-cd)pyrene	58	58	%REC	1	1
SW-846 6010	7439-89-6	Iron	90	103	%REC	11	10
SW-846 8270	78-59-1	Isophorone	63	63	%REC	1	1
SW-846 6010	7439-92-1	Lead	93	102	%REC	11	10
SW-846 6010	7439-93-2	Lithium	84	104	%REC	11	10
SW-846 6010	7439-96-5	Manganese	89	102	%REC	11	10
SW-846 6010	7439-97-6	Mercury	92	105	%REC	11	10
SW-846 8260	75-09-2	Methylene chloride	85.62	130.7	%REC	33	31
SW-846 6010	7439-98-7	Molybdenum	88	101	%REC	11	10
SW-846 8270	86-30-6	n-Nitrosodiphenylamine	71	71	%REC	1	1
SW-846 8270	621-64-7	n-Nitrosodipropylamine	65	65	%REC	1	1

Test Method	CAS	Analyte	Min Result	Max Result	Result Unit	No. of Analytes	No. of Batches
SW-846 8270	91-20-3	Naphthalene	59	59	%REC	1	1
SW-846 8260	91-20-3	Naphthalene	86.79	126	%REC	33	31
SW-846 6010	7440-02-0	Nickel	90	101	%REC	11	10
SW-846 8270	98-95-3	Nitrobenzene	66	66	%REC	1	1
SW-846 8270	87-86-5	Pentachlorophenol	55	55	%REC	1	1
SW-846 8270	108-95-2	Phenol	66	66	%REC	1	1
SW-846 8270	129-00-0	Pyrene	56	56	%REC	1	1
SW-846 6010	7782-49-2	Selenium	94	102	%REC	11	10
SW-846 6010	7440-22-4	Silver	93	103	%REC	11	10
SW-846 6010	7440-24-6	Strontium	93	104	%REC	11	10
SW-846 8260	100-42-5	Styrene	84.06	128.5	%REC	33	31
SW-846 8260	127-18-4	Tetrachloroethene	80	128.1	%REC	33	31
SW-846 6010	7440-31-5	Tin	88	102	%REC	11	10
SW-846 8260	108-88-3	Toluene	84	131.7	%REC	33	31
SW-846 8260	10061-02-6	trans-1,3-Dichloropropene	80.05	125.7	%REC	33	31
SW-846 8260	79-01-6	Trichloroethene	78.43	118.7	%REC	33	31
SW-846 6010	11-09-7	Uranium, Total	99	107	%REC	11	10
SW-846 6010	7440-62-2	Vanadium	92	102	%REC	11	10
SW-846 8260	75-01-4	Vinyl chloride	54.85	250.1	%REC	33	31
SW-846 8260	1330-20-7	Xylene	84.99	125.7	%REC	33	31
SW-846 6010	7440-66-6	Zinc	90	99	%REC	11	10

### Surrogate Evaluation

The frequency of surrogate measurements, relative to each laboratory batch, is given in Table 9. Surrogate frequency was adequate based on at least one set per sample. The minimum and maximum surrogate results are also tabulated, by chemical, for the entire project. Surrogates are added to every sample, and therefore, surrogate recoveries only impact individual samples. Unacceptable surrogate recoveries can indicate potential matrix effects. The highest and lowest surrogate recoveries for this project were reviewed, and the associated sample results were far enough from the ALs to indicate project decisions would not be impacted. Any qualifications of results due to surrogate results are captured in the V&V flags, described in Section 13.2.3.

### Field Blank Evaluation

Results of the field blank analyses are given in Table 10. Detectable amounts of contaminants within the blanks, which could indicate possible cross-contamination of samples, are evaluated if the same contaminant is detected in the associated real samples. When the real result is less than 10 times the blank result for laboratory contaminants and 5 times the result for nonlaboratory contaminants, the real result is eliminated. None of the chemicals were detected in the blanks at concentrations greater than one-tenth the AL. Therefore, no sample results at or above the AL could have been impacted by the blanks.

**Table 9**  
**Surrogate Recovery Summary**

<b>VOC Surrogate Recoveries</b>				
<b>Number of Samples</b>	<b>Analyte</b>	<b>Minimum Concentration</b>	<b>Maximum Concentration</b>	<b>Unit</b>
94	1,2-Dichloroethane -d4	72	118.1	%REC
94	Bromofluorobenzene	78	116.7	%REC
94	Toluene - d8	77.93	114.1	%REC

<b>SVOC Surrogate Recoveries</b>				
<b>Number of Samples</b>	<b>Analyte</b>	<b>Minimum Concentration</b>	<b>Maximum Concentration</b>	<b>Unit</b>
3	2-Fluorobiphenyl	65	71	%REC
3	Nitrobenzene-d5	72	77	%REC
3	o-Fluorophenol	70	73	%REC
3	Terphenyl-d14	65	74	%REC

**Table 10**  
**Field Blank Summary**

<b>Test Method</b>	<b>CAS No.</b>	<b>Analyte</b>	<b>Sample QC Code</b>	<b>Max Result</b>	<b>Unit</b>	<b>Lab Results Qualifier Code</b>
SW-846 8260	78-93-3	2-Butanone	TB	12	ug/L	J
SW-846 8260	67-64-1	Acetone	FB	14	ug/L	J
SW-846 8260	67-64-1	Acetone	TB	22	ug/L	J
SW-846 6010	7429-90-5	Aluminum	RNS	0.3	mg/L	-
SW-846 6010	7429-90-5	Aluminum	RNS	0.048	mg/L	B
SW-846 6010	7440-39-3	Barium	RNS	0.0021	mg/L	B
SW-846 6010	7440-41-7	Beryllium	RNS	0.00076	mg/L	B
SW-846 8260	67-66-3	Chloroform	TB	1.1	ug/L	J
SW-846 6010	7440-50-8	Copper	RNS	0.016	mg/L	-
SW-846 6010	7440-50-8	Copper	RNS	0.0022	mg/L	B
SW-846 6010	7439-89-6	Iron	RNS	0.11	mg/L	-
SW-846 6010	7439-93-2	Lithium	RNS	0.0016	mg/L	B
SW-846 6010	7439-96-5	Manganese	RNS	0.004	mg/L	B
SW-846 8260	75-09-2	Methylene chloride	TB	0.26	ug/L	JB
SW-846 8260	91-20-3	Naphthalene	TB	1	ug/L	J
SW-846 8260	91-20-3	Naphthalene	TB	0.96	ug/L	JB
SW-846 6010	7440-24-6	Strontium	RNS	0.0068	mg/L	B
SW-846 6010	7440-31-5	Tin	RNS	0.0089	mg/L	B
SW-846 8260	108-88-3	Toluene	TB	4.5	ug/L	J
Gamma Spectroscopy	15117-96-1	Uranium-235	RNS	0.186	pCi/G-Wet	-
Gamma Spectroscopy	7440-61-1	Uranium-238	RNS	2.59	pCi/G-Wet	-
SW-846 8260	1330-20-7	Xylene	RNS	2.5	ug/L	J

Field blank (TB = trip, RNS = rinse, and FB = field) results greater than detection limits (not \*U\* qualified)

**Sample Matrix Spike Evaluation**

The frequency of MS measurements, relative to each laboratory batch, was adequate based on at least one MS per batch. The minimum and maximum MS results are summarized by chemical for the entire project in Table 11. Organic analytes with unacceptable low recoveries resulted in a review of the LCS recoveries. According to the EPA data validation guidelines (EPA 1994b), if organic MS recoveries are low, then the LCS recovery is to be checked and, if acceptable, no action is to be taken. For this project, these checks indicate no decisions were impacted for organic analytes. For inorganics, the associated sample results were divided by the lowest percent recovery for each analyte. If the resulting number was less than the AL, decisions were not impacted, and no action was taken. For this project, all results were acceptable; however, iron had 0 percent recovery as a low. For this analyte, the AL was at least a factor of three times higher than the highest sample result; therefore, no decisions were impacted.

**Table 11**  
**Sample MS Evaluation Summary**

Test Method	CAS No.	Analyte	Min Result	Max Result	Unit	No. of Samples	No. of Lab Batches
SW-846 8260	71-55-6	1,1,1-Trichloroethane	73	112.9	%REC	13	13
SW-846 8260	79-34-5	1,1,2,2-Tetrachloroethane	0	119.7	%REC	13	13
SW-846 8260	79-00-5	1,1,2-Trichloroethane	35.35	138.5	%REC	13	13
SW-846 8260	75-34-3	1,1-Dichloroethane	80	117.4	%REC	13	13
SW-846 8260	75-35-4	1,1-Dichloroethene	78	162.9	%REC	13	13
SW-846 8260	120-82-1	1,2,4-Trichlorobenzene	59	99.92	%REC	13	13
SW-846 8270	120-82-1	1,2,4-Trichlorobenzene	65	65	%REC	1	1
SW-846 8260	95-50-1	1,2-Dichlorobenzene	74	96.81	%REC	13	13
SW-846 8260	107-06-2	1,2-Dichloroethane	73	134.2	%REC	13	13
SW-846 8260	78-87-5	1,2-Dichloropropane	75	147.1	%REC	13	13
SW-846 8260	106-46-7	1,4-Dichlorobenzene	77	94.08	%REC	13	13
SW-846 8270	95-95-4	2,4,5-Trichlorophenol	72	72	%REC	1	1
SW-846 8270	88-06-2	2,4,6-Trichlorophenol	68	68	%REC	1	1
SW-846 8270	120-83-2	2,4-Dichlorophenol	69	69	%REC	1	1
SW-846 8270	105-67-9	2,4-Dimethylphenol	66	66	%REC	1	1
SW-846 8270	51-28-5	2,4-Dinitrophenol	40	40	%REC	1	1
SW-846 8270	121-14-2	2,4-Dinitrotoluene	75	75	%REC	1	1
SW-846 8270	606-20-2	2,6-Dinitrotoluene	73	73	%REC	1	1
SW-846 8260	78-93-3	2-Butanone	63	193.9	%REC	13	13
SW-846 8270	91-58-7	2-Chloronaphthalene	67	67	%REC	1	1
SW-846 8270	95-57-8	2-Chlorophenol	70	70	%REC	1	1
SW-846 8270	91-57-6	2-Methylnaphthalene	69	69	%REC	1	1
SW-846 8270	95-48-7	2-Methylphenol	73	73	%REC	1	1
SW-846 8270	88-74-4	2-Nitroaniline	75	75	%REC	1	1
SW-846 8270	91-94-1	3,3'-Dichlorobenzidine	60	60	%REC	1	1
SW-846 8270	534-52-1	4,6-Dinitro-2-methylphenol	38	38	%REC	1	1
SW-846 8270	106-47-8	4-Chloroaniline	60	60	%REC	1	1
SW-846 8260	108-10-1	4-Methyl-2-pentanone	66	124.9	%REC	13	13

Test Method	CAS No.	Analyte	Min Result	Max Result	Unit	No. of Samples	No. of Lab Batches
SW-846 8270	106-44-5	4-Methylphenol	75	75	%REC	1	1
SW-846 8270	100-02-7	4-Nitrophenol	75	75	%REC	1	1
SW-846 8270	83-32-9	Acenaphthene	66	66	%REC	1	1
SW-846 8260	67-64-1	Acetone	52	234.4	%REC	13	13
SW-846 6010	7429-90-5	Aluminum	722	4350	%REC	10	10
SW-846 8270	120-12-7	Anthracene	66	66	%REC	1	1
SW-846 6010	7440-36-0	Antimony	35	75	%REC	10	10
SW-846 8082	12674-11-2	Aroclor-1016	87	194	%REC	3	3
SW-846 8082	11096-82-5	Aroclor-1260	92	130	%REC	3	3
SW-846 6010	7440-38-2	Arsenic	84	99	%REC	10	10
SW-846 6010	7440-39-3	Barium	82	114	%REC	10	10
SW-846 8260	71-43-2	Benzene	80	110	%REC	13	13
SW-846 8270	56-55-3	Benzo(a)anthracene	63	63	%REC	1	1
SW-846 8270	50-32-8	Benzo(a)pyrene	66	66	%REC	1	1
SW-846 8270	205-99-2	Benzo(b)fluoranthene	64	64	%REC	1	1
SW-846 8270	207-08-9	Benzo(k)fluoranthene	72	72	%REC	1	1
SW-846 8270	65-85-0	Benzoic Acid	42	42	%REC	1	1
SW-846 8270	100-51-6	Benzyl Alcohol	78	78	%REC	1	1
SW-846 6010	7440-41-7	Beryllium	82	105	%REC	10	10
SW-846 8270	111-44-4	bis(2-Chloroethyl)ether	66	66	%REC	1	1
SW-846 8270	39638-32-9	bis(2-Chloroisopropyl)ether	71	71	%REC	1	1
SW-846 8270	117-81-7	bis(2-Ethylhexyl)phthalate	86	86	%REC	1	1
SW-846 8260	75-27-4	Bromodichloromethane	66.73	133.3	%REC	13	13
SW-846 8260	75-25-2	Bromoform	71	115.7	%REC	13	13
SW-846 8260	74-83-9	Bromomethane	59.5	109	%REC	13	13
SW-846 8270	85-68-7	Butylbenzylphthalate	78	78	%REC	1	1
SW-846 6010	7440-43-9	Cadmium	71	99	%REC	10	10
SW-846 8260	75-15-0	Carbon Disulfide	51	105	%REC	13	13
SW-846 8260	56-23-5	Carbon Tetrachloride	75	104	%REC	13	13
SW-846 8260	108-90-7	Chlorobenzene	80	102.4	%REC	13	13
SW-846 8260	75-00-3	Chloroethane	57.82	110	%REC	13	13
SW-846 8260	67-66-3	Chloroform	78	114.7	%REC	13	13
SW-846 8260	74-87-3	Chloromethane	44.77	194.2	%REC	13	13
SW-846 6010	7440-47-3	Chromium	74	123	%REC	10	10
SW-846 8270	218-01-9	Chrysene	63	63	%REC	1	1
SW-846 8260	10061-01-5	cis-1,3-Dichloropropene	82	138.1	%REC	13	13
SW-846 6010	7440-48-4	Cobalt	85	103	%REC	10	10
SW-846 6010	7440-50-8	Copper	62	134	%REC	10	10
SW-846 8270	84-74-2	Di-n-butylphthalate	72	72	%REC	1	1
SW-846 8270	117-84-0	Di-n-octylphthalate	68	68	%REC	1	1
SW-846 8270	53-70-3	Dibenz(a,h)anthracene	61	61	%REC	1	1
SW-846 8270	132-64-9	Dibenzofuran	68	68	%REC	1	1
SW-846 8260	124-48-1	Dibromochloromethane	78.4	105.2	%REC	13	13
SW-846 8270	84-66-2	Diethylphthalate	70	70	%REC	1	1

Test Method	CAS No.	Analyte	Min Result	Max Result	Unit	No. of Samples	No. of Lab Batches
SW-846 8270	131-11-3	Dimethylphthalate	67	67	%REC	1	1
SW-846 8260	100-41-4	Ethylbenzene	78	103.2	%REC	13	13
SW-846 8270	206-44-0	Fluoranthene	63	63	%REC	1	1
SW-846 8270	86-73-7	Fluorene	67	67	%REC	1	1
SW-846 8270	118-74-1	Hexachlorobenzene	69	69	%REC	1	1
SW-846 8260	87-68-3	Hexachlorobutadiene	48	135.7	%REC	13	13
SW-846 8270	87-68-3	Hexachlorobutadiene	65	65	%REC	1	1
SW-846 8270	77-47-4	Hexachlorocyclopentadiene	42	42	%REC	1	1
SW-846 8270	67-72-1	Hexachloroethane	68	68	%REC	1	1
SW-846 8270	193-39-5	Indeno(1,2,3-cd)pyrene	61	61	%REC	1	1
SW-846 6010	7439-89-6	Iron	0	3060	%REC	10	10
SW-846 8270	78-59-1	Isophorone	71	71	%REC	1	1
SW-846 6010	7439-92-1	Lead	85	105	%REC	10	10
SW-846 6010	7439-93-2	Lithium	80	103	%REC	10	10
SW-846 6010	7439-96-5	Manganese	31	313	%REC	10	10
SW-846 6010	7439-97-6	Mercury	22	101	%REC	10	10
SW-846 8260	75-09-2	Methylene chloride	82.18	100.9	%REC	13	13
SW-846 6010	7439-98-7	Molybdenum	79	92	%REC	10	10
SW-846 8270	86-30-6	n-Nitrosodiphenylamine	81	81	%REC	1	1
SW-846 8270	621-64-7	n-Nitrosodipropylamine	72	72	%REC	1	1
SW-846 8260	91-20-3	Naphthalene	61	101.7	%REC	13	13
SW-846 8270	91-20-3	Naphthalene	65	65	%REC	1	1
SW-846 6010	7440-02-0	Nickel	81	108	%REC	10	10
SW-846 8270	98-95-3	Nitrobenzene	72	72	%REC	1	1
SW-846 8270	87-86-5	Pentachlorophenol	57	57	%REC	1	1
SW-846 8270	108-95-2	Phenol	74	74	%REC	1	1
SW-846 8270	129-00-0	Pyrene	70	70	%REC	1	1
SW-846 6010	7782-49-2	Selenium	90	101	%REC	10	10
SW-846 6010	7440-22-4	Silver	85	105	%REC	10	10
SW-846 6010	7440-24-6	Strontium	59	115	%REC	10	10
SW-846 8260	100-42-5	Styrene	76	101.9	%REC	13	13
SW-846 8260	127-18-4	Tetrachloroethene	77	104	%REC	13	13
SW-846 6010	7440-31-5	Tin	80	94	%REC	10	10
SW-846 8260	108-88-3	Toluene	78	100	%REC	13	13
SW-846 8260	10061-02-6	trans-1,3-Dichloropropene	74	134.5	%REC	13	13
SW-846 8260	79-01-6	Trichloroethene	98.63	185	%REC	13	13
SW-846 6010	11-09-7	Uranium, Total	88	100	%REC	10	10
SW-846 6010	7440-62-2	Vanadium	84	117	%REC	10	10
SW-846 8260	75-01-4	Vinyl chloride	44.22	129.5	%REC	13	13
SW-846 8260	1330-20-7	Xylene	76.01	99.73	%REC	13	13
SW-846 6010	7440-66-6	Zinc	25	106	%REC	10	10



### 13.2.2 Precision

#### Matrix Spike Duplicate Evaluation

Laboratory precision is measured through use of MSDs. Adequate frequency of MSD measurements is indicated by at least one MSD in each laboratory batch. Table 12 indicates that MSD frequencies were adequate. The analytes with the highest relative percent differences (RPDs) were reviewed by comparing the highest sample result to the AL. If the highest sample concentrations were sufficiently below the AL, no further action is needed. For this project, the reviews indicated decisions were not impacted. While some of the RPDs appear to be high, they would not result in rejection of data that affect project decisions.

**Table 12**  
**Sample MSD Evaluation Summary**

Test Method	CAS No.	Analyte	No. of Sample Pairs	No. of Lab Batches	Max RPD
SW-846 8260	71-55-6	1,1,1-Trichloroethane	13	13	23.30
SW-846 8260	79-34-5	1,1,2,2-Tetrachloroethane	8	8	120.68
SW-846 8260	79-00-5	1,1,2-Trichloroethane	13	13	27.03
SW-846 8260	75-34-3	1,1-Dichloroethane	13	13	24.81
SW-846 8260	75-35-4	1,1-Dichloroethene	13	13	24.07
SW-846 8260	120-82-1	1,2,4-Trichlorobenzene	13	13	24.18
SW-846 8270	120-82-1	1,2,4-Trichlorobenzene	1	1	4.51
SW-846 8260	95-50-1	1,2-Dichlorobenzene	13	13	26.00
SW-846 8260	107-06-2	1,2-Dichloroethane	13	13	26.42
SW-846 8260	78-87-5	1,2-Dichloropropane	13	13	25.48
SW-846 8260	106-46-7	1,4-Dichlorobenzene	13	13	22.44
SW-846 8270	95-95-4	2,4,5-Trichlorophenol	1	1	1.38
SW-846 8270	88-06-2	2,4,6-Trichlorophenol	1	1	4.32
SW-846 8270	120-83-2	2,4-Dichlorophenol	1	1	2.86
SW-846 8270	105-67-9	2,4-Dimethylphenol	1	1	4.44
SW-846 8270	51-28-5	2,4-Dinitrophenol	1	1	5.13
SW-846 8270	121-14-2	2,4-Dinitrotoluene	1	1	6.45
SW-846 8270	606-20-2	2,6-Dinitrotoluene	1	1	5.33
SW-846 8260	78-93-3	2-Butanone	13	13	30.41
SW-846 8270	91-58-7	2-Chloronaphthalene	1	1	2.94
SW-846 8270	95-57-8	2-Chlorophenol	1	1	2.82
SW-846 8270	91-57-6	2-Methylnaphthalene	1	1	1.44
SW-846 8270	95-48-7	2-Methylphenol	1	1	1.36
SW-846 8270	88-74-4	2-Nitroaniline	1	1	2.63
SW-846 8270	91-94-1	3,3'-Dichlorobenzidine	1	1	4.88
SW-846 8270	534-52-1	4,6-Dinitro-2-methylphenol	1	1	2.67
SW-846 8270	106-47-8	4-Chloroaniline	1	1	5.13
SW-846 8260	108-10-1	4-Methyl-2-pentanone	13	13	33.51
SW-846 8270	106-44-5	4-Methylphenol	1	1	1.32
SW-846 8270	100-02-7	4-Nitrophenol	1	1	7.69

Test Method	CAS No.	Analyte	No. of Sample Pairs	No. of Lab Batches	Max RPD
SW-846 8270	83-32-9	Acenaphthene	1	1	4.44
SW-846 8260	67-64-1	Acetone	13	13	44.43
SW-846 6010	7429-90-5	Aluminum	9	9	90.27
SW-846 8270	120-12-7	Anthracene	1	1	1.50
SW-846 6010	7440-36-0	Antimony	10	10	33.63
SW-846 8082	12674-11-2	Aroclor-1016	3	3	55.26
SW-846 8082	11096-82-5	Aroclor-1260	3	3	6.69
SW-846 6010	7440-38-2	Arsenic	10	10	4.65
SW-846 6010	7440-39-3	Barium	10	10	72.73
SW-846 8260	71-43-2	Benzene	13	13	23.29
SW-846 8270	56-55-3	Benzo(a)anthracene	1	1	6.15
SW-846 8270	50-32-8	Benzo(a)pyrene	1	1	4.44
SW-846 8270	205-99-2	Benzo(b)fluoranthene	1	1	6.06
SW-846 8270	207-08-9	Benzo(k)fluoranthene	1	1	5.41
SW-846 8270	65-85-0	Benzoic Acid	1	1	4.88
SW-846 8270	100-51-6	Benzyl Alcohol	1	1	2.53
SW-846 6010	7440-41-7	Beryllium	10	10	10.00
SW-846 8270	111-44-4	bis(2-Chloroethyl)ether	1	1	8.70
SW-846 8270	39638-32-9	bis(2-Chloroisopropyl)ether	1	1	5.48
SW-846 8270	117-81-7	bis(2-Ethylhexyl)phthalate	1	1	9.76
SW-846 8260	75-27-4	Bromodichloromethane	13	13	24.78
SW-846 8260	75-25-2	Bromoform	13	13	27.54
SW-846 8260	74-83-9	Bromomethane	13	13	24.39
SW-846 8270	85-68-7	Butylbenzylphthalate	1	1	2.53
SW-846 6010	7440-43-9	Cadmium	10	10	6.80
SW-846 8260	75-15-0	Carbon Disulfide	13	13	30.30
SW-846 8260	56-23-5	Carbon Tetrachloride	13	13	25.78
SW-846 8260	108-90-7	Chlorobenzene	13	13	22.89
SW-846 8260	75-00-3	Chloroethane	13	13	19.18
SW-846 8260	67-66-3	Chloroform	13	13	26.55
SW-846 8260	74-87-3	Chloromethane	13	13	51.38
SW-846 6010	7440-47-3	Chromium	10	10	86.51
SW-846 8270	218-01-9	Chrysene	1	1	6.15
SW-846 8260	10061-01-5	cis-1,3-Dichloropropene	13	13	24.81
SW-846 6010	7440-48-4	Cobalt	10	10	12.50
SW-846 6010	7440-50-8	Copper	9	9	26.16
SW-846 8270	84-74-2	Di-n-butylphthalate	1	1	0.00
SW-846 8270	117-84-0	Di-n-octylphthalate	1	1	5.71
SW-846 8270	53-70-3	Dibenz(a,h)anthracene	1	1	6.35
SW-846 8270	132-64-9	Dibenzofuran	1	1	4.32
SW-846 8260	124-48-1	Dibromochloromethane	13	13	26.53
SW-846 8270	84-66-2	Diethylphthalate	1	1	6.90
SW-846 8270	131-11-3	Dimethylphthalate	1	1	5.80

Test Method	CAS No.	Analyte	No. of Sample Pairs	No. of Lab Batches	Max RPD
SW-846 8260	100-41-4	Ethylbenzene	13	13	22.22
SW-846 8270	206-44-0	Fluoranthene	1	1	0.00
SW-846 8270	86-73-7	Fluorene	1	1	4.38
SW-846 8270	118-74-1	Hexachlorobenzene	1	1	0.00
SW-846 8270	87-68-3	Hexachlorobutadiene	1	1	4.51
SW-846 8260	87-68-3	Hexachlorobutadiene	13	13	18.92
SW-846 8270	77-47-4	Hexachlorocyclopentadiene	1	1	9.09
SW-846 8270	67-72-1	Hexachloroethane	1	1	4.32
SW-846 8270	193-39-5	Indeno(1,2,3-cd)pyrene	1	1	6.35
SW-846 6010	7439-89-6	Iron	6	6	79.17
SW-846 8270	78-59-1	Isophorone	1	1	2.78
SW-846 6010	7439-92-1	Lead	10	10	11.24
SW-846 6010	7439-93-2	Lithium	10	10	9.14
SW-846 6010	7439-96-5	Manganese	10	10	109.49
SW-846 6010	7439-97-6	Mercury	10	10	58.06
SW-846 8260	75-09-2	Methylene chloride	13	13	25.33
SW-846 6010	7439-98-7	Molybdenum	10	10	4.94
SW-846 8270	86-30-6	n-Nitrosodiphenylamine	1	1	4.82
SW-846 8270	621-64-7	n-Nitrosodipropylamine	1	1	2.74
SW-846 8270	91-20-3	Naphthalene	1	1	3.03
SW-846 8260	91-20-3	Naphthalene	13	13	39.15
SW-846 6010	7440-02-0	Nickel	10	10	31.16
SW-846 8270	98-95-3	Nitrobenzene	1	1	4.08
SW-846 8270	87-86-5	Pentachlorophenol	1	1	5.41
SW-846 8270	108-95-2	Phenol	1	1	2.67
SW-846 8270	129-00-0	Pyrene	1	1	4.20
SW-846 6010	7782-49-2	Selenium	10	10	4.40
SW-846 6010	7440-22-4	Silver	10	10	4.60
SW-846 6010	7440-24-6	Strontium	9	9	12.70
SW-846 8260	100-42-5	Styrene	13	13	24.24
SW-846 8260	127-18-4	Tetrachloroethene	13	13	23.46
SW-846 6010	7440-31-5	Tin	10	10	4.88
SW-846 8260	108-88-3	Toluene	13	13	24.60
SW-846 8260	10061-02-6	trans-1,3-Dichloropropene	13	13	26.87
SW-846 8260	79-01-6	Trichloroethene	13	13	33.77
SW-846 6010	11-09-7	Uranium, Total	10	10	4.26
SW-846 6010	7440-62-2	Vanadium	10	10	32.61
SW-846 8260	75-01-4	Vinyl chloride	13	13	38.03
SW-846 8260	1330-20-7	Xylene	13	13	22.22
SW-846 6010	7440-66-6	Zinc	10	10	115.25

### Field Duplicate Evaluation

Field duplicate results reflect sampling precision, or overall repeatability of the sampling process. The frequency of field duplicate collection should exceed 1 field duplicate per 20 real samples, or 5 percent. Table 13 indicates that field duplicate frequencies were inadequate with respect to radionuclides (alpha spectroscopy) and some metal analyses (Method 6010) for this project.

The RPD values indicate how much variation exists in the field duplicate analyses. EPA data validation guidelines state that "there are no required review criteria for field duplicate analyses comparability" (EPA 1994b). For the DQA, the highest RPD values (Table 14) were reviewed. The highest concentrations for analytes with high RPD values were multiplied by three, and the resulting values were compared to the ALs. For this project, several of the adjusted values were greater than the ALs; however, project decisions were not impacted (i.e., analytical results for those analytes did not affect remediation decisions).

**Table 13**  
**Field Duplicate Sample Frequency Summary**

Test Method	Sample Code	Number of Samples	% Duplicate Samples
ALPHA SPEC	REAL	21	0.00%
GAMMA SPECTROSCOPY	REAL	93	7.53%
GAMMA SPECTROSCOPY	DUP	7	
SW-846 6010	REAL	63	7.94%
SW-846 6010	DUP	5	
SW-846 6200	REAL	41	2.44%
SW-846 6200	DUP	1	
SW-846 8082	REAL	7	14.29%
SW-846 8082	DUP	1	
SW-846 8260	REAL	94	6.38%
SW-846 8260	DUP	6	
SW-846 8270	REAL	3	33.33%
SW-846 8270	DUP	1	

**Table 14**  
**RPD Evaluation Summary**

Laboratory	Analyte	Max RPD
ESTLDEN	1,2,4-Trichlorobenzene	11.92
ESTLDEN	2,4,5-Trichlorophenol	11.92
ESTLDEN	2,4,6-Trichlorophenol	11.92
ESTLDEN	2,4-Dichlorophenol	11.92
ESTLDEN	2,4-Dimethylphenol	11.92
ESTLDEN	2,4-Dinitrophenol	10.53
ESTLDEN	2-Chloronaphthalene	11.92
ESTLDEN	2-Chlorophenol	11.92

Laboratory	Analyte	Max RPD
ESTLDEN	2-Methylnaphthalene	11.92
ESTLDEN	2-Methylphenol	11.92
ESTLDEN	2-Nitroaniline	10.53
ESTLDEN	3,3'-Dichlorobenzidine	13.33
ESTLDEN	4,6-Dinitro-2-methylphenol	10.53
ESTLDEN	4-Chloroaniline	13.33
ESTLDEN	4-Methylphenol	11.92
ESTLDEN	4-Nitrophenol	10.53
ESTLDEN	Acenaphthene	10.53
ESTLDEN	Aluminum	10.53
ESTLDEN	Anthracene	10.53
ESTLDEN	Aroclor-1221	2.90
ESTLDEN	Aroclor-1232	2.90
ESTLDEN	Aroclor-1242	2.90
ESTLDEN	Aroclor-1254	43.75
ESTLDEN	Barium	50
ESTLDEN	Benzo(a)anthracene	11.92
ESTLDEN	Benzo(a)pyrene	11.92
ESTLDEN	Benzo(b)fluoranthene	11.92
ESTLDEN	Benzo(k)fluoranthene	11.92
ESTLDEN	Benzoic Acid	10.53
ESTLDEN	Benzyl Alcohol	13.33
ESTLDEN	Beryllium	5.71
ESTLDEN	bis(2-Chloroethyl)ether	11.92
ESTLDEN	bis(2-Chloroisopropyl)ether	11.92
ESTLDEN	bis(2-Ethylhexyl)phthalate	11.92
ESTLDEN	Butylbenzylphthalate	11.92
ESTLDEN	Chromium	57.14
URS	Chromium	8.29
ESTLDEN	Chrysene	11.92
ESTLDEN	Cobalt	20.95
ESTLDEN	Copper	145.10
URS	Copper	53.67
ESTLDEN	Di-n-butylphthalate	11.92
ESTLDEN	Di-n-octylphthalate	11.92
ESTLDEN	Dibenz(a,h)anthracene	11.92
ESTLDEN	Dibenzofuran	11.92
ESTLDEN	Diethylphthalate	11.92
ESTLDEN	Dimethylphthalate	11.92
ESTLDEN	Fluoranthene	11.92
ESTLDEN	Fluorene	11.92
ESTLDEN	Hexachlorobenzene	11.92
ESTLDEN	Hexachlorobutadiene	11.92
ESTLDEN	Hexachlorocyclopentadiene	11.92

Laboratory	Analyte	Max RPD
ESTLDEN	Hexachloroethane	11.92
ESTLDEN	Indeno(1,2,3-cd)pyrene	11.92
URS	Iron	49.42
ESTLDEN	Iron	47.19
ESTLDEN	Isophorone	11.92
ESTLDEN	Lead	88.89
ESTLDEN	Lithium	26.19
URS	Manganese	71.64
ESTLDEN	Manganese	11.90
ESTLDEN	n-Nitrosodiphenylamine	11.92
ESTLDEN	n-Nitrosodipropylamine	11.92
ESTLDEN	Naphthalene	11.92
ESTLDEN	Nickel	30
URS	Nickel	25.81
ESTLDEN	Nitrobenzene	11.92
ESTLDEN	Pentachlorophenol	10.53
ESTLDEN	Phenol	11.92
ESTLDEN	Pyrene	11.92
ESTLDEN	Strontium	95.24
URS	Strontium	6.27
ESTLDEN	Vanadium	50.00
URS	Vanadium	10.34
ESTLDEN	Zinc	149.47
URS	Zinc	46.39

### 13.2.3 Completeness

Based on original project DQOs, a minimum of 25 percent of ER Program analytical (and radiological) results must be formally verified and validated. Of that percentage, no more than 10 percent of the results may be rejected, which ensures that analytical laboratory practices are consistent with quality requirements. Table 15 shows the number and percentage of validated records (codes without "1"), the number and percentage of verified records (codes with "1"), and the percentage of rejected records for each analyte group for this project. For this project, the percentages of analyses validated and verified meet Program requirements, except the validation percentage for Methods 6200 and 8082. However, the ER Program V&V goal of 25 percent is being met.

### 13.2.4 Sensitivity

Reporting limits, in units of micrograms per kilogram (ug/kg) for organics, mg/kg for metals, and picocuries per gram (pCi/g) for radionuclides, were compared with RFCA WRW and ecological receptor ALs. Adequate sensitivities of analytical methods were attained for all COCs that affected remediation decisions. "Adequate" sensitivity is defined as an RL less than an analyte's associated AL, typically less than one-half the AL.

**Table 15**  
**Validation and Verification Summary**

Validation Qualifier Code	Total of CAS Numbers	Alpha Spectroscopy	Gamma Spectroscopy	SW-846 6010	SW-846 6200	SW-846 8082	SW-846 8260	SW-846 8270
No V&V	3	0	3	0	0	0	0	0
I	3	0	3	0	0	0	0	0
J	220	48	0	160	12	0	0	0
J1	163	0	0	103	58	0	2	0
R	1	0	0	1	0	0	0	0
V	2365	20	147	554	116	0	1372	156
V1	3138	27	126	545	486	49	1854	51
JB	8	0	0	0	0	0	8	0
JB1	5	0	0	0	0	0	5	0
UJ	153	6	0	44	16	0	87	0
UJ1	173	0	0	42	50	0	78	3
Total	6232	101	279	1449	738	49	3406	210
Validated	2747	74	147	759	144	0	1467	156
% Validated	44.08%	73.27%	52.69%	52.80%	19.51%	0.00%	43.07%	74.29%
Verified	3482	27	129	690	594	49	1939	54
% Verified	55.87%	26.73%	46.24%	47.62%	80.49%	100.00%	56.93%	25.71%
Rejected	1	0	0	1	0	0	0	0
% Rejected	0.02%	0.00%	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%

**Code Key**

Validated

J, V, JB, UJ

Verified

I, J1, V1, JB1, UJ1

**13.3 Summary of Data Quality**

RPDs greater than 35 percent indicate the sampling precision limits of some analytes have been exceeded. One record was rejected, and the validation percentages for two analytical methods (Methods 6200 and 8082) are below 25 percent. However, the ER Program V&V goal of 25 percent is being met. Data collected and used for IHSS Group 800-1 are adequate for decision-making.

## **14.0 CONCLUSION**

Results of the accelerated action justify NFAA. Justification is based on the reasons summarized below.

- No accelerated action required based on surface soil data. All surface soil analytical results are less than WRW ALs.
- No accelerated action required based on the SSRS. Subsurface soil in the area is not subject to significant erosion. The elevated arsenic and lead concentrations will be further evaluated in the AAESE and the ecological portion of the Sitewide CRA.
- No accelerated action required by the stewardship evaluation.



## **15.0 REFERENCES**

- CDPHE, 2003, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation FY03 Notification #03-12 Approval Letter, September 29.
- DOE, 1992-2003, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado.
- DOE, 1999, Order 414.1A, Quality Assurance.
- DOE, 2000a, Industrial Area Data Summary Report, Rocky Flats Environmental Technology Site, Golden, Colorado, September.
- DOE, 2000b, RFCA Standard Operating Protocol for Facility Disposition, Rocky Flats Environmental Technology Site, Golden, Colorado, August.
- DOE, 2000c, 1999 Annual RFCA Groundwater Monitoring Report for Rocky Flats Environmental Technology Site, Golden, Colorado, November.
- DOE, 2001a, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June.
- DOE, 2001b, Reconnaissance Level Characterization Report, 865 Cluster Closure Project, Rocky Flats Environmental Technology Site, Golden, Colorado, September.
- DOE, 2001c, 2000 Annual RFCA Groundwater Monitoring Report for Rocky Flats Environmental Technology Site, Golden, Colorado, November.
- DOE, 2002a, Industrial Area Sampling and Analysis Plan Addendum #IA-03-01, Rocky Flats Environmental Technology Site, Golden, Colorado, September.
- DOE, 2002b, Second Quarter RFCA Groundwater Monitoring Report for Calendar Year 2002, Rocky Flats Environmental Technology Site, Golden, Colorado, November.
- DOE, 2002c, 2001 Annual RFCA Groundwater Monitoring Report for Rocky Flats Environmental Technology Site, Golden, Colorado, November.
- DOE, 2003a, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Rocky Flats Environmental Technology Site, Golden, Colorado. June.
- DOE, 2003b, Environmental Restoration RFCA Standard Operating Protocol Notification #03-12, Rocky Flats Environmental Technology Site, Golden, Colorado, September.
- DOE, 2003c, RFCA Standard Operating Protocol for Recycling Concrete, Rocky Flats Environmental Technology Site, Golden, Colorado, June.
- DOE, 2003d, RFCA Standard Operating Protocol for Facility Component Removal, Size Reduction and Decontamination Activities, Rocky Flats Environmental Technology Site, Golden, Colorado, May.
- DOE, 2003e, RFETS Automated Surface-Water Monitoring Report, Water Year 2001, Rocky Flats Environmental Technology Site, Golden, Colorado, May.

DOE, 2004, Final Project Closeout Report for Building 865 Cluster, Draft, Rocky Flats Environmental Technology Site, Golden, Colorado, January.

DOE, CDPHE and EPA, 2003, Modifications to the Rocky Flats Cleanup Agreement Attachment, U.S. Department of Energy, Colorado Department of Public Health and Environment, and U.S. Environmental Protection Agency, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

EPA, 1994a, Guidance for the Data Quality Objective Process, QA/G-4.

EPA, 1994b, USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, 540/R-94/012.

EPA, 1994c, USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, 540/R-94/013.

EPA, 1998, Guidance for the Data Quality Assessment Process, Practical Methods for Data Analysis, QA/G-9.

K-H, 2002, General Guidelines for Data Verification and Validation, DA-GR01-v2, Rocky Flats Environmental Technology Site, Golden, Colorado, October.

K-H, 2002, V&V Guidelines for Isotopic Determinations by Alpha Spectrometry, DA-RC01-v2, Rocky Flats Environmental Technology Site, Golden, Colorado, October.

K-H, 2002, V&V Guidelines for Volatile Organics, DA-SS01-v3, Rocky Flats Environmental Technology Site, Golden, Colorado, October.

K-H, 2002, V&V Guidelines for Semivolatile Organics, DA-SS02-v3, Rocky Flats Environmental Technology Site, Golden, Colorado, October.

K-H, 2002, V&V Guidelines for Metals, DA-SS05-v3, Rocky Flats Environmental Technology Site, Golden, Colorado, October.

Lockheed-Martin, 1997, Evaluation of Radiochemical Data Usability, ES/ER/MS-5.

## **Appendix A Project Photographs**



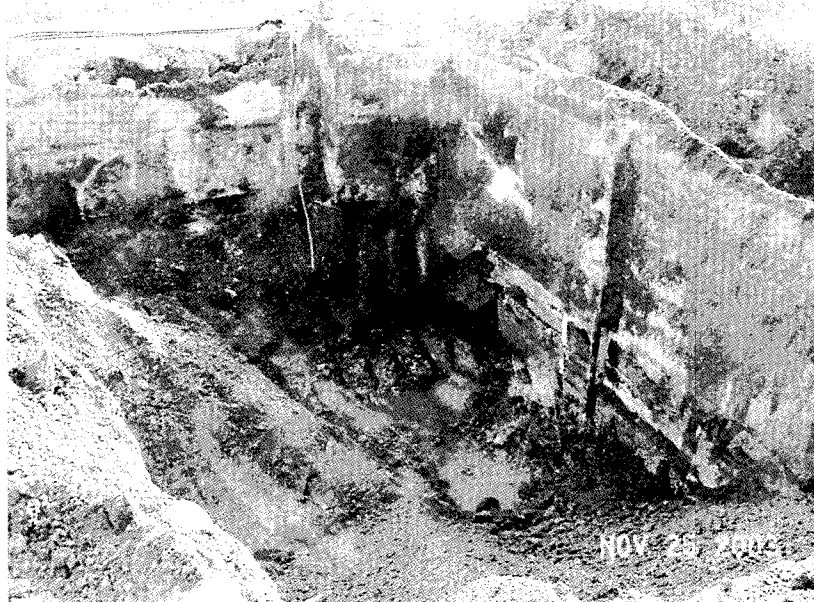
Asphalt removal south of the High Bay



Breakup of the East Dock surface looking southwest



Excavation of the south wall of the East Dock (water is from dust suppression) looking west



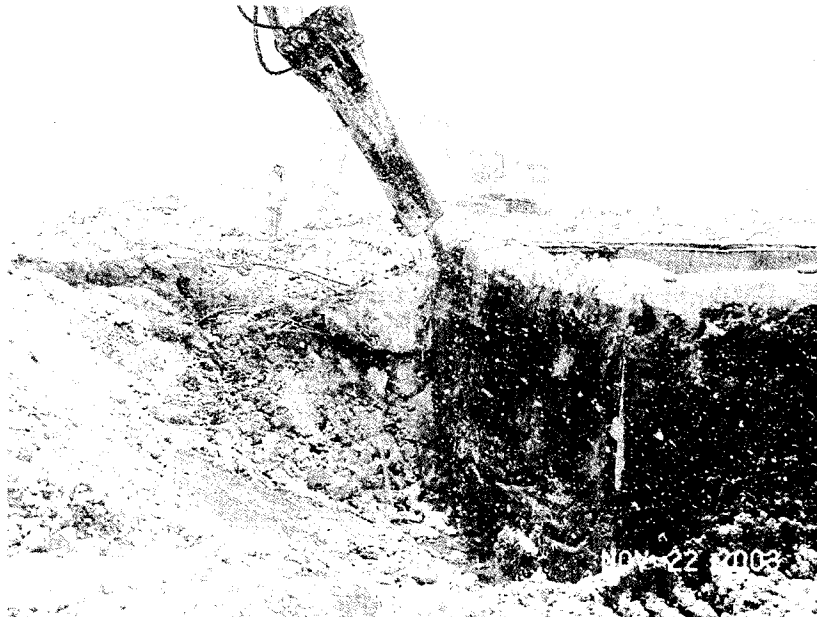
Excavation of East Dock foundation walls looking east



Dust suppression and breakup of the Drop Hammer Pit looking northeast



The Drop Hammer Pit breakup looking southeast



Breakup of the north wall of the Drop Hammer Pit looking east-southeast



Breakup of the High Bay Drop Hammer Pit

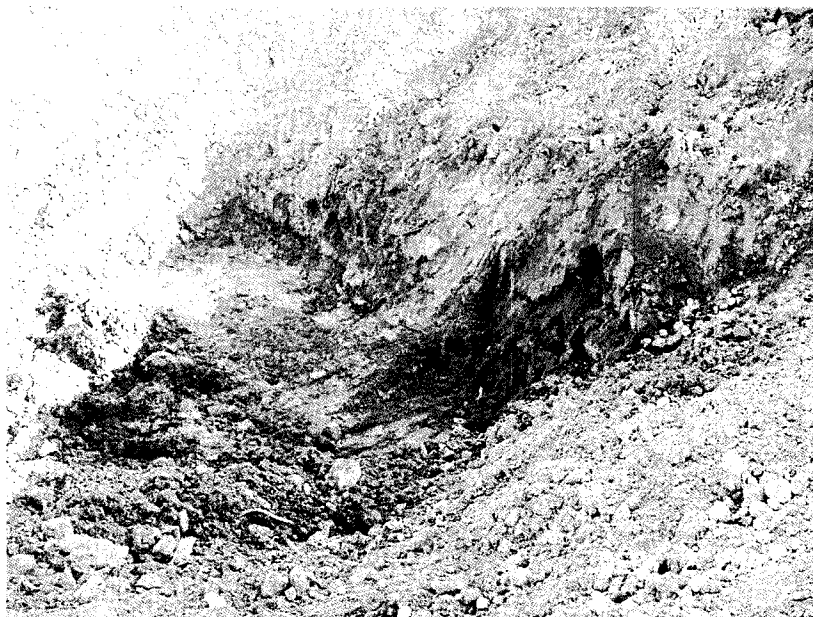


High Bay excavation from the removal of the Drop Hammer Pit looking northeast (Drum was removed from far corner)

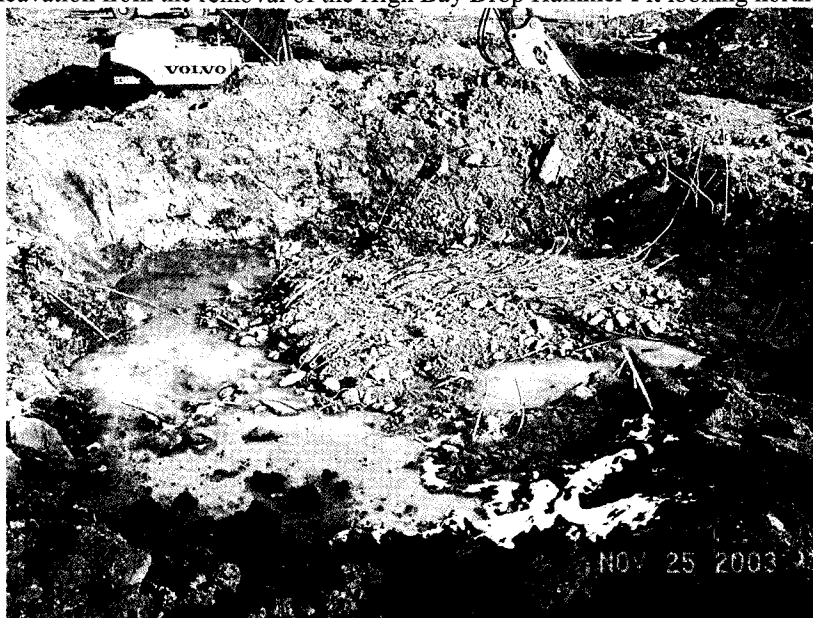


Concrete-Filled Drum removed from outside the base northeast of the Drop Hammer Pit





Excavation from the removal of the High Bay Drop Hammer Pit looking northeast



Excavation from removal of thickened portion of the High Bay Slab that supported the Rolling Mill Press and the Hot Isostatic Press Excavation (looking southwest)



Stainless Steel NPWL exposure near the former Building 866



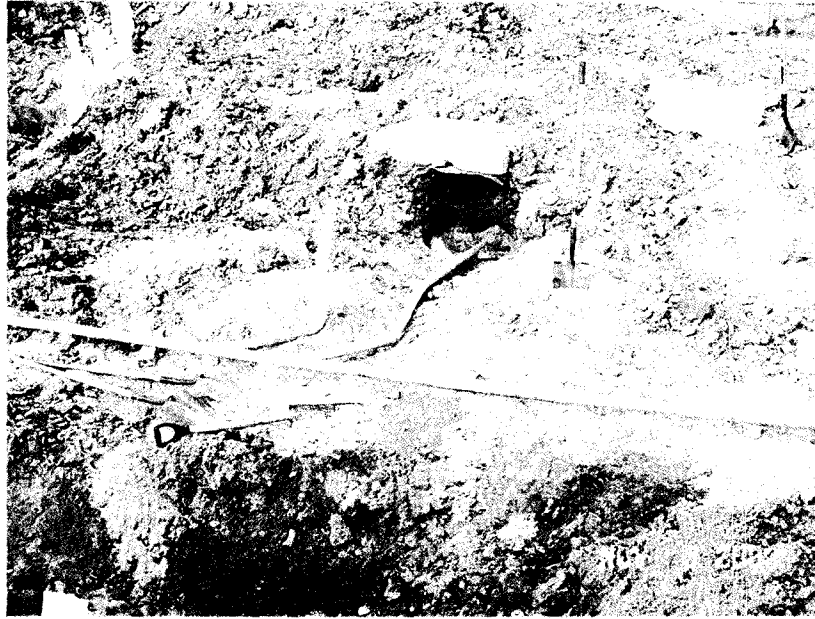
Stainless Steel NPWL and conduit removal near the former Valve Vault 6 looking west



HDPE NPWL exposure at the former Building 866



Low Bay stainless steel OPWL Network in sand bedding



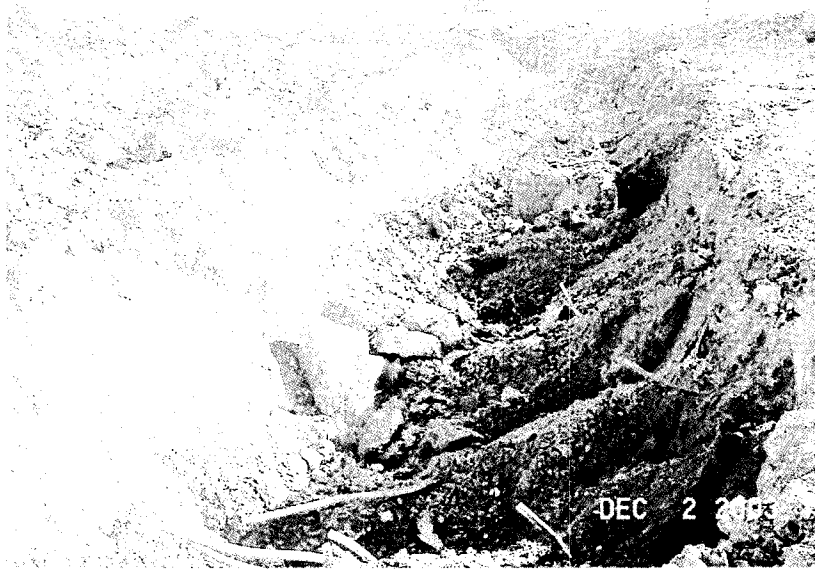
Low Bay OPWL Network being severed from floor drains



Clearing of west side High Bay foundation wall along OPWL Trench looking east toward 883

Best Available Copy

9/0



High Bay OPWL Trench looking south toward 881



Electrical Conduit removal from under Low Bay Slab looking south

Best Available Copy



Cooling Tower Pipelines on west side of High Bay looking north

## **Appendix B Correspondence**

## ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE ER REGULATORY CONTACT RECORD

---

**Date/Time:** 12/22/2003 / 1:00 PM  
**Site Contact(s):** Mike Bemski  
**Phone:** 303-966-4090

**Regulatory Contact:** David Kruchek  
**Phone:** 303-692-3328

**Agency:** CDPHE

---

**Purpose of Contact:** Permission to backfill NPWL and foundation drainpipe excavations at 865

---

### **Discussion**

Based upon analytical results received, it is understood that we have permission to backfill the excavations created by the removal of the NPWL from the former 866 to the former 889 and the NPWL from the former 866 to the former Valve Vault 6. No staining or other indication of a leak was noticed in either excavation.

The foundation drainpipe around most of the perimeter of the former 865 has been breached in three locations. At each of the three locations, the open ends of the drainpipe that will remain in the subsurface have been grouted shut. The three locations where the breaching took place were surveyed. It is understood that we have permission to backfill the excavation associated with the drainpipe disruption activities.

---

**Contact Record Prepared By:** Mike Bemski

---

### Required Distribution

S. Bell, RFFO	M. Keating, K-H RISS	A. Primrose, K-H RISS
J. Berardini, K-H	G. Kleeman, USEPA	T. Rehder, USEPA
L. Brooks, K-H ESS	D. Kruchek, CDPHE	S. Serreze, RISS
M. Broussard, K-H RISS	D. Mayo, K-H RISS	D. Shelton, K-H
L. Butler, K-H RISS	R. McCalister, DOE	C. Spreng, CDPHE
G. Carnival, K-H RISS	J. Mead, K-H ESS	S. Surovchak, RFFO
N. Castaneda, RFFO	S. Nesta, K-H RISS	K. Wiemelt, K-H RISS
C. Deck, K-H Legal	L. Norland, K-H RISS	C. Zahm, K-H
R. DiSalvo, RFFO	K. North, K-H ESS	M. Aguilar, USEPA
S. Gunderson, CDPHE	E. Pottorff, CDPHE	

Additional Distribution  
(choose names as applicable):  
Hebert, Joe, K-H RISS



# ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE ER REGULATORY CONTACT RECORD

---

**Date/Time:** December 8, 2003/ 1:00 PM

**Site Contact(s):** Mike Bemski  
**Phone:** 303-966-4090

**Regulatory Contact:** David Kruchek  
**Phone:** 303-692-3328

**Agency:** CDPHE

---

**Purpose of Contact:** Change to the FY03 Notification #03-12 IHSS Group 800-1 regarding Final Grade

---

## **Discussion**

In the Final ER RSOP for Routine Soil Remediation FY03 Notification #03-12 IHSS Group 800-1, on Section 2.4, page 6, references are made for removal of slabs associated with support buildings, and storm drains and sanitary sewer lines, to 3 feet below existing grade.

It is understood that with reference to those items, and in compliance with the Facility Disposition RSOP, the wording should read 3 feet below final grade.

For clarification, at 800-1, the OPWL beneath the footprint of the building has been completely removed. OPWL outside the footprint is at least 3 feet below final grade.

---

**Contact Record Prepared By:** Mike Bemski

---

## Required Distribution

S. Bell, RFFO	M. Keating, K-H RISS	A. Primrose, K-H RISS
J. Berardini, K-H	G. Kleeman, USEPA	T. Rehder, USEPA
L. Brooks, K-H ESS	D. Kruchek, CDPHE	S. Serreze, RISS
M. Broussard, K-H RISS	D. Mayo, K-H RISS	D. Shelton, K-H
L. Butler, K-H RISS	R. McCalister, DOE	C. Spreng, CDPHE
G. Carnival, K-H RISS	J. Mead, K-H ESS	S. Surovchak, RFFO
N. Castaneda, RFFO	S. Nesta, K-H RISS	K. Wiemelt, K-H RISS
C. Deck, K-H Legal	L. Norland, K-H RISS	C. Zahm, K-H
R. DiSalvo, RFFO	K. North, K-H ESS	M. Aguilar, USEPA
S. Gunderson, CDPHE	E. Pottorff, CDPHE	

Additional Distribution  
(choose names as applicable):

## ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE ER REGULATORY CONTACT RECORD

---

**Date/Time:** December 8, 2003/ 2:20PM

**Site Contact(s):** Michael Bemski  
**Phone:** 303-966-4090

**Regulatory Contact:** David Kruchek  
**Phone:** 303-692-3328

**Agency:** CDPHE

---

**Purpose of Contact:** Permission to backfill excavations at the 865 Slab Removal Project

---

### Discussion

Based upon the analytical results received, it is understood that the 865 Slab Removal Project is approved to backfill the High Bay excavations of all the Pits, the utilities, the dock on the east side of the slab, the footer foundations and the removal of the OPWL. The Project understands that the backfill is being done "at-risk". That is, the Project will still be required to remediate soils if the outstanding analytical results show contamination above action levels.

---

**Contact Record Prepared By:** Michael Bemski

---

### Required Distribution

S. Bell, RFFO	M. Keating, K-H RISS	A. Primrose, K-H RISS
J. Berardini, K-H	G. Kleeman, USEPA	T. Rehder, USEPA
L. Brooks, K-H ESS	D. Kruchek, CDPHE	S. Serreze, RISS
M. Broussard, K-H RISS	D. Mayo, K-H RISS	D. Shelton, K-H
L. Butler, K-H RISS	R. McCalister, DOE	C. Spreng, CDPHE
G. Carnival, K-H RISS	J. Mead, K-H ESS	S. Surovchak, RFFO
N. Castaneda, RFFO	S. Nesta, K-H RISS	K. Wiemelt, K-H RISS
C. Deck, K-H Legal	L. Norland, K-H RISS	C. Zahm, K-H
R. DiSalvo, RFFO	K. North, K-H ESS	M. Aguilar, USEPA
S. Gunderson, CDPHE	E. Pottorff, CDPHE	

Additional Distribution  
(choose names as applicable):

## ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE ER REGULATORY CONTACT RECORD

---

**Date/Time:** October 31, 2003 / 2:30PM

**Site Contact(s):** Mike Bemski

**Phone:** 303-966-4090

**Regulatory Contact:** David Kruchek

**Phone:** 303-692-3328

**Agency:** CDPHE

---

**Purpose of Contact:** Permission to backfill the excavation from the removal of Building 866 and the Transformer Slab.

---

### Discussion

Per our meeting on Wednesday, October 29, I understand that we have your approval to backfill the excavation created by the removal of Building 866 and sump, and the Transformer Slab and sump, both to the west of Building 865. To fill the excavations, the dirt that was removed will be replaced and should additional dirt be needed, clean dirt from an approved site away from 865 will be used.

---

**Contact Record Prepared By:** Mike Bemski

---

### Required Distribution

S. Bell, RFFO

J. Berardini, K-H

L. Brooks, K-H ESS

M. Broussard, K-H RISS

L. Butler, K-H RISS

G. Carnival, K-H RISS

N. Castaneda, RFFO

C. Deck, K-H Legal

R. DiSalvo, RFFO

S. Gunderson, CDPHE

M. Keating, K-H RISS

G. Kleeman, USEPA

D. Kruchek, CDPHE

D. Mayo, K-H RISS

R. McCalister, DOE

J. Mead, K-H ESS

S. Nesta, K-H RISS

L. Norland, K-H RISS

K. North, K-H ESS

E. Pottorff, CDPHE

A. Primrose, K-H RISS

T. Rehder, USEPA

S. Serreze, RISS

D. Shelton, K-H

C. Spreng, CDPHE

S. Surovchak, RFFO

K. Wiemelt, K-H RISS

C. Zahm, K-H

M. Aguilar, USEPA

### Additional Distribution

J. Hebert

G. Kelly

**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE  
ENVIRONMENTAL RESTORATION  
REGULATORY CONTACT RECORD**

---

**Date/Time:** October 29, 2003

**Site Contact(s):** Susan Serreze  
**Phone:** 303-966-2677

**Regulatory Contact:** Elizabeth Pottorff, Dave Kruchek, Harlen Ainscough  
**Phone:** 303-692-3300

**Agency:** CDPHE

---

**Purpose of Contact:** Consultative Process Meeting– Meeting Notes

---

**Discussion**

**October, 29 2003 Comment Resolution Meetings  
For**

**IHSS Group 400-3 Field Completion  
IHSS Group 800-1 PCB Locations  
IHSSs 150.6 and 150.8 NFAA  
IHSS Group 700-5 IASAP Addendum and ER RSOP Notification  
IHSS Group 700-7 IASAP Addendum and ER RSOP Notification  
IHSS Group 700-4 Update  
IHSS Group 700-6 IASAP Addendum and ER RSOP Notification  
IHSS Group 500-1 and 500-5 IASAP Addendum and ER RSOP Notification  
IHSS Group 400-2 IASAP Addendum  
IHSS Group 900-3 Data Summary Report  
IHSS Group 900-2 Data Summary Report  
SE-1602 Update**

A meeting was held on October 29, 2003 to discuss several topics including IHSS Group 400-3 Field Completion, IHSS Group 800-1 PCB Locations, IHSSs 150.6 and 150.8 NFAA, IHSS Group 700-5 IASAP Addendum and ER RSOP Notification, IHSS Group 700-7 IASAP Addendum and ER RSOP Notification, IHSS Group 700-4 Update, IHSS Group 700-6 IASAP Addendum and ER RSOP Notification, IHSS Group 500-1 and 500-5 IASAP Addendum and ER RSOP Notification, IHSS Group 400-2 IASAP Addendum, IHSS Group 900-3 Data Summary Report, IHSS Group 900-2 Data Summary Report

**I. Attendees**

CDPHE: Harlen Ainscough, Dave Kruchek, Carl Spreng  
K-H: Marcella Broussard, Jan Wolstrom  
K-H Team: Nick Demos, Mark Ruthven, Susan Serreze

## II. Report Status

Upcoming reports include the IHSS Group 700-2 IASAP Addendum and Notification, IHSS Group 400-2 Notification, IHSS Group 600-3 IASAP and Notification, and the IABZSAP Modification.

## III. Issues

No sitewide issues were discussed.

## IV. Specific Comments

### **IHSS Group 400-3 Field Completion**

The following resolutions were agreed to:

1. Based on the 95% UCL compared to the AL, no remediation is required for the surface soil manganese AL exceedance.
2. Based on the 95% UCL compared to the AL, no remediation is required for the surface soil lead AL exceedance beneath the northern portion of Building 444.
3. Based on the Subsurface Soil Risk Screen, no remediation is required for the subsurface surface soil manganese AL exceedance.
4. While beryllium was not found at concentrations greater than the AL beneath or around Building 444, additional information about the presence of beryllium in foundation drain will be added. This may result in stewardship recommendations.

### **IHSS Group 800-1 PCB Locations**

The concrete transformer slab northwest of Building 865 was removed and samples were collected from a depth of approximately 4.5 feet below the ground surface. Additional samples were collected in accordance with the IASAP Addendum #IA-03-01.

The following resolutions were agreed to:

1. These samples along with those collected in 1991 are sufficient to characterize the transformer pad northwest of Building 865.

### **IHSSs 150.6 and 150.8 NFAA**

CDPHE will approve the NFAA for IHSSs 150.6 and 150.8.

#### **IHSS Group 700-5 IASAP Addendum and ER RSOP Notification**

CDPHE will approve the IASAP Addendum and ER RSOP Notification for IHSS Group 700-5.

#### **IHSS Group 700-7 IASAP Addendum and ER RSOP Notification**

CDPHE will approve the IASAP Addendum and ER RSOP Notification for IHSS Group 700-7.

#### **IHSS Group 700-4 Update**

A contact record describes the removal action that will be taken at the CERLCA tanks in IHSS Group 700-4.

The following resolutions were agreed to:

1. Because a notification was not written, the elements of the notification will be included in the Closeout Report. All PCOCs will be evaluated with respect to action levels.

#### **IHSS Group 700-6 IASAP Addendum and ER RSOP Notification**

CDPHE will approve IASAP Addendum and ER RSOP Notification for IHSS Group 700-6.

The following resolutions were agreed to:

1. Field and health and safety personnel will be notified that any remaining sludge in the settling basins should be sampled to determine if there are risks to workers before work begins.

#### **IHSS Group 500-1 and 500-5 IASAP Addendum and ER RSOP Notification**

The following resolutions were agreed to:

##### *Addendum*

1. A figure that shows all existing data will be added to the addendum.
2. The text will be clarified to indicate that only VOCs will be analyzed for at locations where samples already exist.
3. Data collected as part of the Operable Unit 13 RFI/RI were validated according to Site procedures. Additionally, these data were screened through RADMS and are considered adequate for decision-making.

4. J. R. Marshall will be contacted for information on the depth, type, and source of fill used for PA construction.
5. A statement will be added that sampling will occur beneath PA fill.
6. All other CDPHE editorial comments will be incorporated.

#### *Notification*

1. PCBs will be added to Table 1 as PCOCs for IHSS 117.1.
2. PAC 904 will be changed to PAC 500-904 throughout the text and on maps.
3. Text in Section 2.2 will be reviewed to clarify whether IHSS 300-186 included the NPWL.
4. The text in Section 2.2 will be clarified to indicate that the metal debris in the burial pits is part of IHSS 197 not 117.2.
5. The text in the subsurface soil risk screen will be changed to indicate that it is applicable to soil with non-radionuclide and uranium contamination below 6 inches in depth.
6. The text in the subsurface soil risk screen will be amended to indicate that although this IHSS Group is not in an area of high erosion in accordance with RFCA Attachment 5, it is in an area of potential erosion.
7. References to the "RFCA Modification" will be changed to "RFCA Attachment 5".
8. Text will be clarified to indicate whether D&D or ER staff will remove or close structures.
9. The surface water sections of the SSRS and the Stewardship Evaluation will be reviewed for consistency.

#### **IHSS Group 400-2 IASAP Addendum**

The following resolutions were agreed to:

1. A statement indicating that additional samples will be collected based on building conditions.
2. A PDF of the revised map with the internal building structures will be sent to H. Ainscough at CDPHE.

#### **IHSS Group 900-3 Data Summary Report**

Additional samples were collected at the 904 Pad and no AL exceedances were found.

The following resolutions were agreed to:

1. Text will be added that discusses the differences in depth and composition of materials beneath the 904 Pad.
2. A PDF of the revised document will be sent to H. Ainscough at CDPHE.

#### **IHSS Group 900-2 Data Summary Report**

Data for IHSS Group 900-2 is being reviewed and tables and maps revised to incorporate WRW and Eco ALs.

**IHSS Group 900-12 BZSAP Addendum**

EPA will provide comments on this BZSAP Addendum.

**PAC SE-1602**

PAC 1602 was mislabeled as NE-1602 in the 1999 HRR.

RFET staff will develop a BZSAP Addendum for sampling at the firing range after sampling options are identified.

IV. Meetings

The next meeting is scheduled for Thursday, November 13, 2003, from 10:00 AM to Noon.



# ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE ER REGULATORY CONTACT RECORD

**Date/Time:** October 28, 2003/ 9:30AM

**Site Contact(s):** Mike Bemski

**Phone:** 303-966-4090

**Regulatory Contact:** David Kruchek

**Phone:** 303-692-3328

**Agency:** CDPHE

**Purpose of Contact:** Permission to backfill the excavation of the footer around the perimeter of the Low Bay of the Building 865 Slab

## **Discussion**

Per our phone conversation this morning, I understand that we have your approval to backfill the excavation created by the removal of the footer around the west, north, and east perimeter of the Low Bay of the Building 865 Slab. To fill the excavation, the dirt that was removed will be replaced and should additional dirt be needed, clean dirt from an approved site away from 865 will be used.

**Contact Record Prepared By:** Mike Bemski

## Required Distribution

S. Bell, RFFO

J. Berardini, K-H

L. Brooks, K-H ESS

M. Broussard, K-H RISS

L. Butler, K-H RISS

G. Carnival, K-H RISS

N. Castaneda, RFFO

C. Deck, K-H Legal

R. DiSalvo, RFFO

S. Gunderson, CDPHE

M. Keating, K-H RISS

G. Kleeman, USEPA

D. Kruchek, CDPHE

D. Mayo, K-H RISS

R. McCalister, DOE

J. Mead, K-H ESS

S. Nesta, K-H RISS

L. Norland, K-H RISS

K. North, K-H ESS

E. Pottorff, CDPHE

A. Primrose, K-H RISS

T. Rehder, USEPA

S. Serreze, RISS

D. Shelton, K-H

C. Spreng, CDPHE

S. Surovchak, RFFO

K. Wiemelt, K-H RISS

C. Zahm, K-H

## Additional Distribution

J. Hebert

G. Kelly

## **COMPLETE DATA SET COMPACT DISC**

### **PRE-ACCELERATED ACTION AND ACCELERATED ACTION DATA**

CD NOT INCLUDED

Figure 1  
IHSS Group 800-1 Location

KEY

IHSS Group 800-1

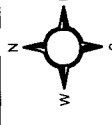
Demolished building

Standing building

Paved areas

Stream, ditch, or other drainage

Dirt road



500 0 500 Feet

Scale = 1:7,500

State Plane Coordinate Projection  
Colorado Central Zone  
Datum: NAD 27

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by:

**RADMS**

Prepared for:



**KAISER-HILL**  
COMPANY

File: w:\projects\2003\characterization\800-1 existing data.apr  
Date: 12/22/03

IHSS Group 800-1

**Figure 2**  
**IHSS Group 800-1**  
**Pre-Accelerated Action**  
**Soil Sampling Results**

## KEY

- Sampling location with concentrations greater than background means plus 2 standard deviations or method detection limits (MDLs)

Sampling location with concentrations less than background means plus 2 standard deviations or MDLs

UBC 865

PAC

OPWL

NPWL

Valve vault

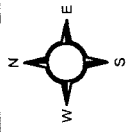
Sewer

Storm drain

Paved areas

Building

Stream, ditch, or other drainage



Scale = 1:900

## State Plane Coordinate Projection

Colorado Central Zo

U.S. Department of Energy

Rocky Flats Environmental Technology Site

Prepared by:

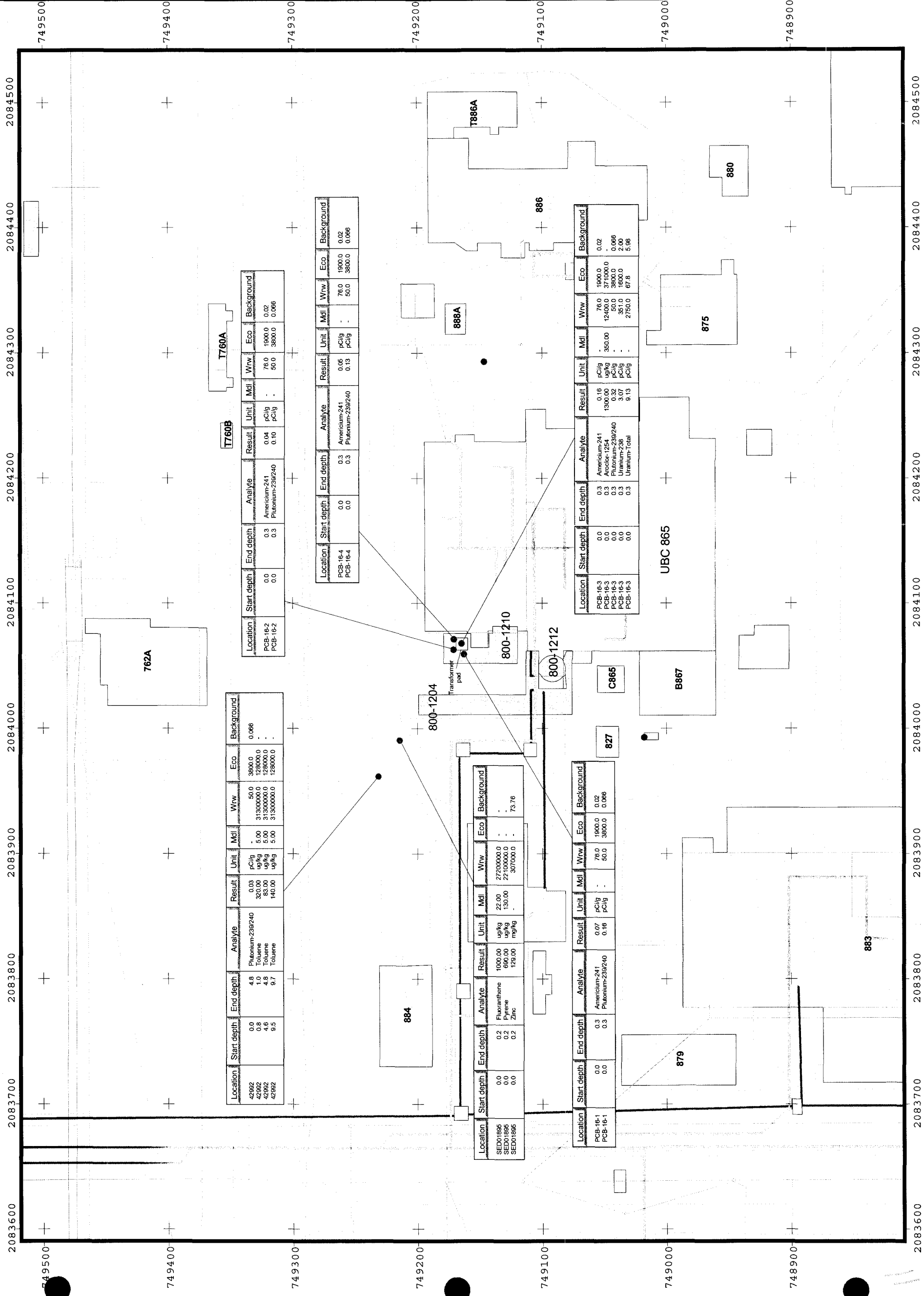
# RADMS

Prepared for:



KAISER • HILL  
COMPANY

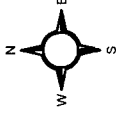
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800-1-existing data.apr\sampling results



File: w:\projects\2003\characterization\800-1-existing data.apr\sampling results

**Figure 5**  
**IHSS Group 800-1**  
**Slabs, Pits, Sump &**  
**Process Lines Removed**

KEY	
	Standing footer wall
	Remaining OPWL
	OPWL removed
	Remaining foundation drain
	Foundation drain removed
	Remaining NPWL
	NPWL removed
	NPWL not found during project
	Valve vault location
	Pit removed
	Equipment pedestal removed (down to at least 3' below grade)
	Transformer pad removed
	Slab removed
	Demolished structure
	Standing structure
	Drainage ditch
	Paved roads



Scale = 1: 500  
State Plane Coordinate Projection  
Colorado Central Zone  
Datum: NAD 27

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

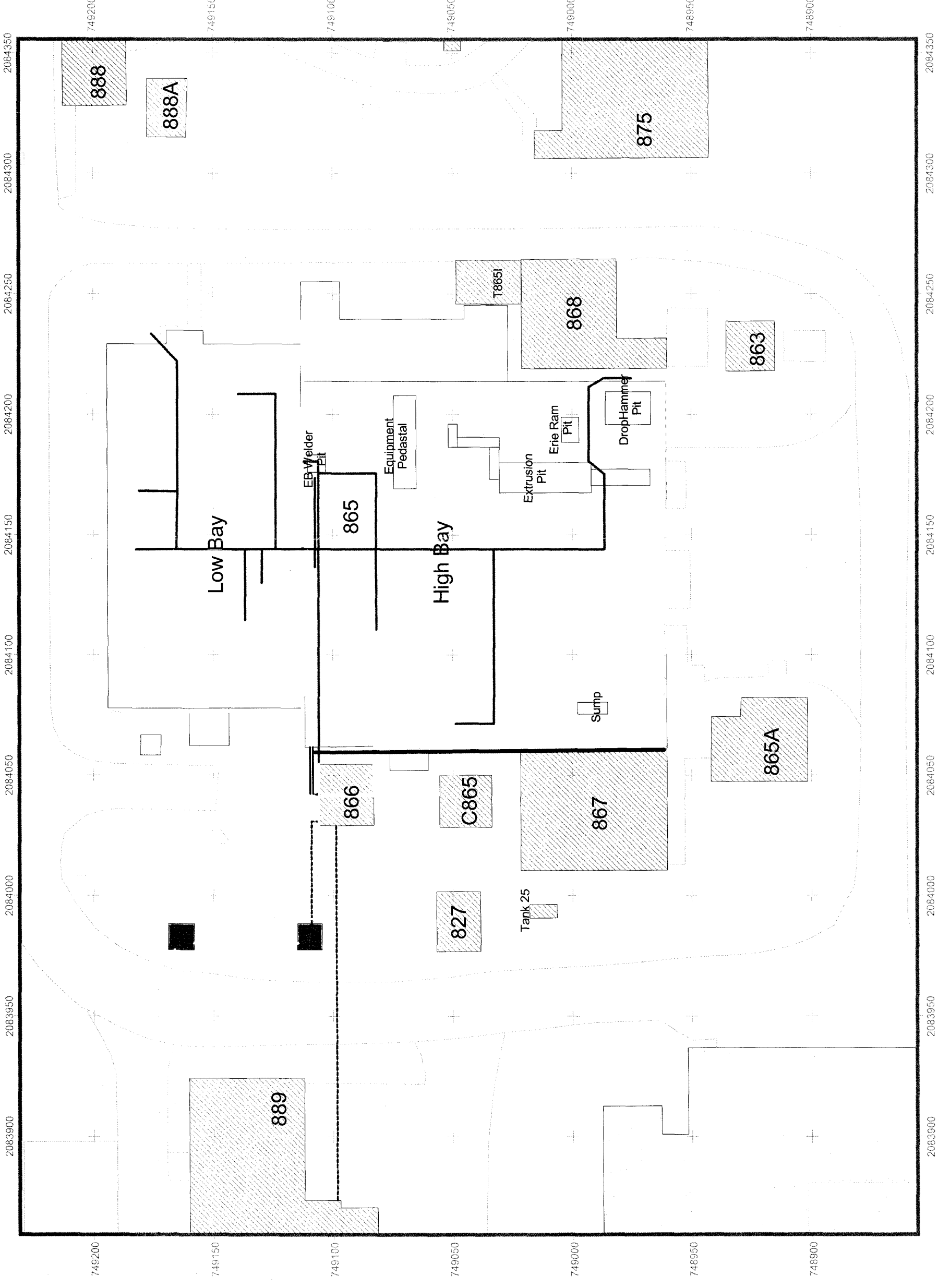
Prepared by:

Prepared for:

**RADMS**  
RADICAL ACTION DESIGN MANAGEMENT SERVICES



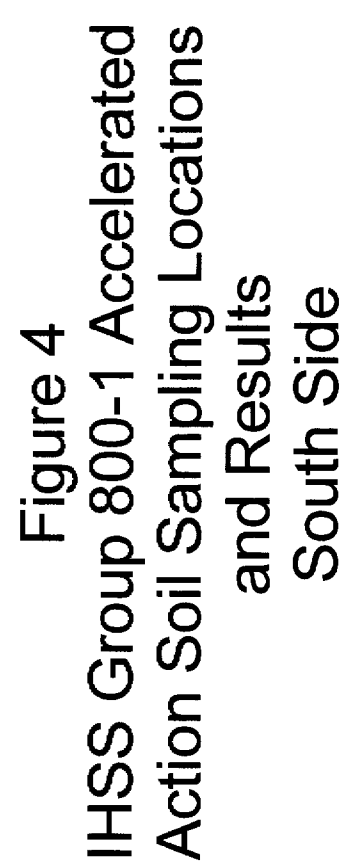
File: W:\Projects\FY2003\800-1  
Characterization\800-1\_existing data.apr Date: 02.05.04











## KEY

- Sampling location with concentration greater than the WRW AL
- Sampling location with concentration greater than the Ecological Receptor AL
- Sampling location with concentrations less than ALs
- Sampling location with concentrations less than background means plus two standard deviations or reporting limits

UBC 865

PAC

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**17/01/2019**

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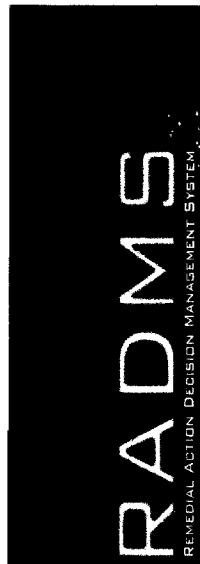
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State Plane Coordinate Projection  
Colorado Central Zone  
Datum: NAD 27

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by:



Prepared for:



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800-1-existing data apr

